ASIAN IMPORTS APPLICATION

Operator's Manual

3rd Edition

Acura
Chrysler Imports
Daihatsu
Honda
Hyundai
Infiniti
Isuzu
Kia
Lexus
Mazda
Mitsubishi
Nissan
Subaru
Suzuki
Toyota

Vetronix
Bosch Group

SOME THINGS YOU SHOULD KNOW

CAUTION!

EXHAUST GAS

When performing any checks with the engine running in an enclosed space such as a garage, be sure there is proper ventilation. Never inhale exhaust gases; they contain carbon monoxide, a colorless, odorless extremely dangerous gas which can cause unconsciousness or death.

CAUTION!

Always set the parking brake securely before performing any checks or repairs on the vehicle to help prevent vehicle movement that may cause injury.

IMPORTANT-PLEASE READ

The **TECH 1**, **TECH 1A**, and **Mastertech** are designed for use by authorized personnel only. They have been developed for the sole purpose of diagnosing and repairing automotive electronic systems. With the help of the information presented in this manual and the appropriate automotive service manual, qualified personnel should be able to diagnose and repair vehicle electronic control systems.

DISCLAIMER

Every attempt has been made to provide complete and accurate technical information based on service information available at the time of publication. However, the right is reserved to make changes at any time without notice.

FCC CERTIFICATION

"This equipment complies with the requirement in Part 15 of FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps necessary to correct the interference."

A NOTE ABOUT TECH 1 AND TECH 1A TESTERS

The **TECH 1** Series A is an updated version of the **TECH 1**. In addition to already proven **TECH 1** diagnostic power, the **TECH 1** Series A has on-board RS232, Instrumentation Port, and DC Power Jack capabilities. You can differentiate a **TECH 1A** from a **TECH 1** by the phone-style jacks on both sides of the tester. All existing aftermarket **TECH 1** application cartridges will run in the **TECH 1A**. Note that the **TECH 1** and **TECH 1A** do not use the same DLC or DC Power cable, nor are the Adapters the same.

On some vehicles power to the cigarette lighter is controlled by the ignition switch. When testing these vehicles with a TECH 1 or TECH1A, it is best to connect the tester directly to the battery with the optional Battery Adapter Cable (P/N 02001636), which is available from your TECH1A distributor.

USING THIS CARTRIDGE WITH A TECH 1 OR TECH 1A TESTER

When using the Asian Imports Software and a **TECH 1A** on OBD II compliant controllers, an OBD II interface cartridge and 16/14 pin adapter cable is required, or an OBD II Vehicle Interface Module (VIM) and 16/24 pin adapter cable can be used. When using the Asian Imports Software and a **TECH 1** on Asian vehicles with OBD II compliant controllers, an OBD II Vehicle Interface Module (VIM) and 16/24 pin adapter cable will be required.

When you are using this manual to diagnose a vehicle, take the time to determine the type of tester that you are working with and be sure you are using the correct cables and adapters. Doing so may prevent misuse of application cartridges and incorrect vehicle diagnosis.

USING THIS CARTRIDGE WITH A MASTERTECH TESTER

In addition to the **TECH 1** and **TECH 1A**, this cartridge can also be used with the **Mastertech** tester. Refer to the **Mastertech** Operator's Manual for installing the cartridge and connecting the **Mastertech** to the vehicle.

When using the Asian Imports Software cartridge and a MASTERTECH on Asian vehicles with OBD II compliant controllers, an OBD II compliant MASTERTECH and 16/14 pin adapter cable is required, or an OBD II Vehicle Interface Module (VIM) and 16/24 pin adapter cable can be used.

When used alone in the **Mastertech**, the operation of the cartridge and the vehicle identification screens, test menus and data screens are as described in this manual.

This cartridge can also be used with the **Mastertech** in conjunction with a program card, which allows viewing of vehicle identification screens, test menus, and diagnostic data parameters in full-screen Enhanced Mode displays. Refer to the Enhanced Mode operating instructions in the program card operator's manual for further detail.

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INTRODUCTION

Reading through this manual before putting your Asian Imports Cartridge and TECH 1, TECH1A or Mastertech tester to work will introduce you to the diagnostic capabilities and tell you how to use them immediately. The application software is designed to reduce time-consuming reference to manuals as much as possible. Once you are familiar with the software and its operation, you'll be able to spend more time diagnosing and less time reading. Later, if questions arise, a quick glance at the flow chart for the test you are performing will probably be all you need.

COMMON TEST MODES DESCRIPTION

Operating Procedures for test modes that are common to two or more makes of vehicles are included in the Common Test Modes section. These test modes are listed below:

MODE F0: Data List
MODE F1: DTC Entry
MODE F2: DTC(s)
MODE F3: Snapshot
MODE F4: OBD Controls
MODE F5: System Tests
MODE F8: Information

MANUFACTURER SPECIFIC SECTIONS DESCRIPTION

Information that is specific for the different makes of vehicles is included in the Manufacturer Specific sections. Each Manufacturer Specific section includes a chart of the years and models that can be tested, a chart of adapters required, instructions for connecting the tester to the vehicle, and operating procedures for the manufacturer specific test modes.

Also included in the Manufacturer Specific section is a complete list of Diagnostic Trouble Codes (DTCs) for each vehicle.

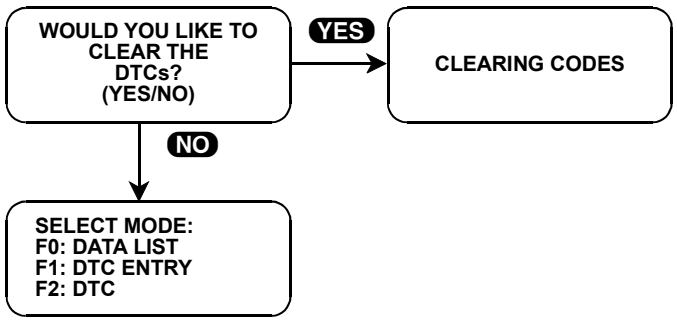
For vehicles capable of providing serial data to the tester, a list of the parameters available and a description of each parameter is provided.

FLOW CHART DESCRIPTION

The flow charts in this manual consist of screen displays enclosed in boxes. The displays are arranged in the order in which they appear while using the tester. If you are using a Mastertech tester, full screen displays are available when operating in Enhanced Mode. Refer to the Multi-Function Tester Program Card Operator's Manual for Enhanced Mode operating instructions.

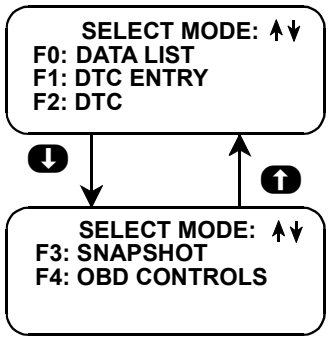
Keys on the tester keypad are shown in the manual as white letters in small black boxes. There is a list of the active tester keys and their functions at the end of each operating procedure.

Some display screens, such as vehicle selection and test mode menus, require input from you. To respond when the tester asks for information, just press the appropriate key on the tester keypad. In the example below, pressing the YES key causes the tester to display the screen to the right and pressing NO causes the lower screen to be displayed. Although there are exceptions, pressing the EXIT key generally takes you back to the previous screen.



TEST SELECTION MENU DESCRIPTION

The tester displays up to three test modes at a time. If other test modes are available, the tester automatically scrolls to the next menu display after three seconds. To stop the automatic scrolling, press the ↓ key. The display may then be manually scrolled by pressing the ↑ key. Regardless of which test modes are displayed, any test mode can be selected at any time from the menu. All menus of more than three items scroll in this way.



1. OPERATING PRECAUTIONS

CONNECTING AND DISCONNECTING THE TESTER WHILE IGNITION KEY IS ON

Due to the possibility of voltage spikes that could damage the vehicle or tester electronics, you should not connect or disconnect the tester while the ignition key is ON or while the engine is running.

REMOVING THE CARTRIDGE WHILE THE TESTER IS POWERED ON

The cartridge should not be removed or installed from the tester while the tester is powered on. If after installing the cartridge the tester does not appear to be functioning properly, reset the tester by disconnecting the power plug from the vehicle and reconnecting it.

VEHICLE SPECIFIC PRECAUTIONS

For some vehicles, additional precautions are included in the Manufacturer Specific Sections.

2. ASIAN IMPORTS CARTRIDGE KIT DESCRIPTION

The Asian Imports Cartridge is used with the TECH 1, TECH 1 Series A (TECH1A) or Mastertech tester to diagnose Asian Import vehicles manufactured by Acura, Chrysler Imports, Daihatsu, Honda, Hyundai, Infiniti, Isuzu, Kia, Lexus, Mazda, Mitsubishi, Nissan, Subaru, Suzuki, and Toyota (for Isuzu and Suzuki diagnostic test mode descriptions, please refer to the Isuzu and Suzuki Operator's Manuals).

Depending on the vehicle being tested, the Asian Imports Cartridge can be used to test engine and transmission controllers, or powertrain controllers on vehicles with engine and transmission electronics. All tests and prompts are specific to the vehicle that you are testing, which reduces your dependency on shop manuals.

For most Asian vehicles, the cartridge allows you to read system Data List parameters and Diagnostic Trouble Codes (DTCs), input the DTC for a description, command different Electronic Control Unit (ECU) operation modes, control idle speed, clear diagnostic trouble codes, and control various output actuators. To reduce the amount of time required to reach a diagnostic solution, output actuators can be controlled while Data List parameters are displayed.

The Snapshot feature of the cartridge greatly simplifies the task of diagnosing difficult intermittent problems by "capturing" diagnostic parameters, either while you are in the service bay or during road testing. Data is collected both before and after an intermittent event and saved in the tester for later analysis. This data is retained in the tester memory for at least 24 hours, even if you remove your tester from the vehicle, or until it is replaced with newer data.

Some vehicle systems support the use of OBD Controls which can be used to diagnose certain powertrain control system problems. For example, on some systems you can monitor air fuel ratio, determine oxygen sensor range of operation, and perform switch tests. In some cases, the OBD Controls allow you to command the ECU into a mode of operation that sets up an ideal environment for fuel or ignition system diagnostics.

A NOTE ABOUT TECH 1 AND TECH 1A TESTERS

The Asian Imports application cartridge is compatible with the TECH 1, TECH 1A, and MASTERTECH testers. However, if you are using the Asian Imports application cartridge with a TECH 1, a TECH 1 14/15 Pin Data Link Connector (DLC) cable (P/N 02001980) is required for connection to the Asian vehicle adapters. Also, when using a TECH1 tester on Toyota or Lexus vehicles, the number of available OBD systems will be reduced (see the Toyota or Lexus sections in this manual). When using a TECH 1 tester on Mazda vehicles, the Switch Test OBD Controls test will not function properly (see the Mazda section of this manual).

The TECH 1A tester is an updated version of the TECH 1 tester. In addition to already proven TECH 1 diagnostic power, the TECH 1A has on-board RS232, Instrumentation Port, and DC Power Jack capabilities. You can identify a TECH 1A by the phone-style jacks on both sides of the tester.

Note that the TECH1 and TECH 1A require a different DLC cable, DC Power cable, and vehicle adapters. When using this manual to diagnose a vehicle, take the time to determine the type of tester that you have, and be sure you are using the correct cables and adapters. Doing so may prevent misuse of application cartridges and incorrect vehicle diagnosis.

With the built-in RS232C interface, the Mastertech and Tech1A testers both support host computer communications and printer capabilities. Using the optional VP-411 printer, you can print a hard copy of test results. This information is helpful for your reference records as well as customer consultation when you are describing test results.

ASIAN IMPORTS CARTRIDGE FEATURES

With the Asian Imports Cartridge you can:

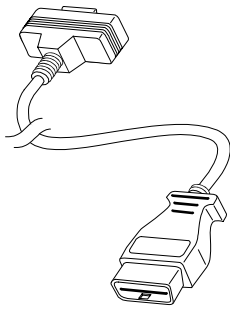
- Select a specific vehicle to test by make, model, model year and VIN code
- Read engine and transmission diagnostic data parameters (if available from vehicle)
- Read instructions for learning how to read DTCs from vehicles with ECU LED, analog voltmeter, or MIL output DTCs
- Read instructions for clearing DTCs from selected vehicles
- Display location of ECU diagnostic jumper connector (DJC), or Data Link connector (DLC)
- Read pending DTCs from OBD II compliant vehicles
- Read and display Diagnostic Trouble Codes, including manufacturer specific DTCs on OBD II compliant vehicles.
- Read Freeze Frame DTC information for OBD II compliant vehicles.
- Print diagnostic data and trouble codes
- View Readiness Test Information for OBD II compliant vehicles
- Diagnose intermittent problems by capturing and storing multiple samples of system data before and after the problem occurs, then examining the data to determine the problem.
- Clear engine and transmission DTCs (not available on all vehicles)
- Perform various engine running tests
- Control engine and transmission actuators (not available on all vehicles)
- Perform specialized tests on selected engine ECUs (not available on all vehicles)
- Control engine idle speed (not available on all vehicles)
- Read engine and transmission controller information (not available on all vehicles)
- Reset engine and transmission memory parameters (not available on all vehicles)

ASIAN IMPORTS CARTRIDGE KIT CONTENTS

The Asian Imports Cartridge kit includes the Asian Imports Cartridge and this operator's manual. The following vehicle specific adapters and cables are used in conjunction with the Asian Imports Cartridge Kit.

Type 3 Cable For OBD II Applications

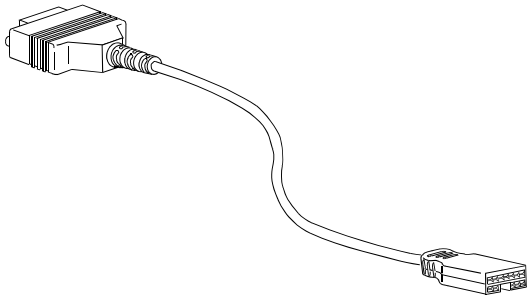
When testing OBDII compliant vehicles with a 16-pin DLC, the 16/14 Pin OBDII Type3 Adapter Cable (P/N 02001969) must be connected to the end of the Mastertech/Tech 1A DLC Adapter Cable.



Type 3 Cable

Chrysler Imports/Hyundai/Mitsubishi Adapter

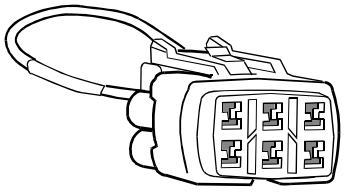
The Chrysler Imports/Hyundai/Mitsubishi Adapter (P/N 02001921) must be connected to the end of the tester DLC Adapter Cable to perform certain tests on these vehicles. The tester informs you where to connect the adapter to the DLC connector on the vehicle.



Chrysler Imports/Hyundai/Mitsubishi Adapter Cable (Yellow)

Daihatsu Jumper

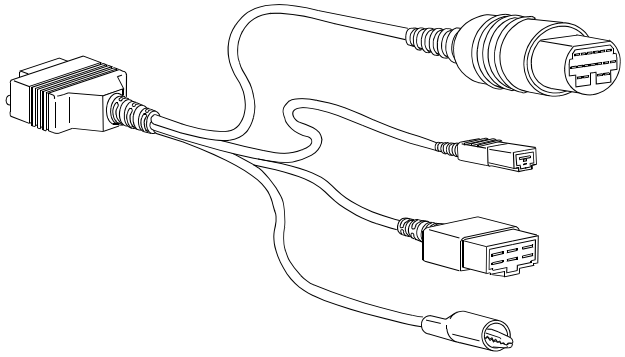
To perform certain tests on Daihatsu vehicles, the Daihatsu 6 Pin Jumper (P/N 02002073) must be connected to the vehicle diagnostic connector. The tester informs you where to connect the jumper to the diagnostic connector on the vehicle.



Daihatsu Jumper

Mazda Adapter

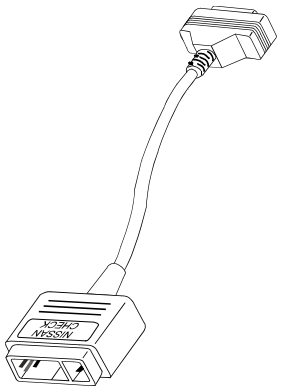
When testing Mazda vehicles, a 1, 6, 17/14 Pin DLC adapter cable (P/N 02001922) must be used. The appropriate orange end of the cable is then connected to the vehicle DLC. A chart at the beginning of the Mazda Specific Instructions indicates which adapter cable connector to use for the selected vehicle.



Mazda Adapter Cable (Orange)

Nissan Check Adapter

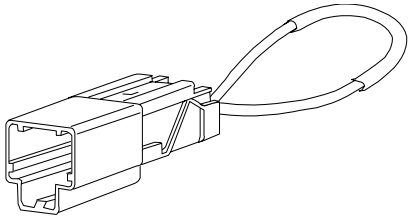
To perform certain tests on Nissan vehicles, the Nissan 12/14 Pin Check adapter (P/N 02001897) must be connected to the end of the tester DLC Adapter Cable. The Red end of the cable is then connected to the vehicle DLC. The tester informs you where to connect the Check Adapter cable to the DLC, on the vehicle.



Nissan Check Adapter Cable (Red)

Honda/Acura SCC Jumper

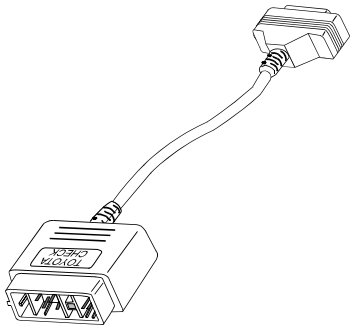
The Honda/Acura 2-Pin Service Check Connector (SCC) Jumper (P/N 02001935) is required for certain tests on Honda and Acura vehicles. The tester informs you where to connect the jumper to the SCC connector on the vehicle.



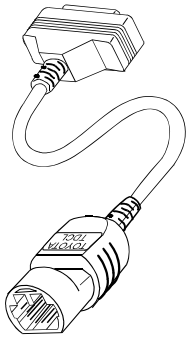
Honda/Acura SCC Jumper

Toyota/Lexus TDCL and Check Adapter Cables

For Toyota and Lexus vehicles, certain tests require the green 17/14 Pin TDCL (P/N 02001895) or the blue 21/14 Pin Check (P/N 02001896) Adapter Cable to be connected to connects to the end of the tester DLC Cable. The color coded end of the adapter cable connects to the vehicle Check connector or TDCL connector.



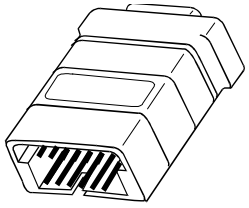
Toyota/Lexus Check Adapter Cable (Blue)



Toyota/Lexus TDCL Adapter Cable (Green)

Suzuki Adapter

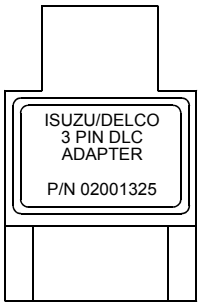
A GM 12/14 Pin DLC adapter is required for connecting the tester to Suzuki vehicles.



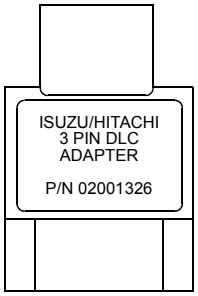
GM 12/14 Pin DLC Adapter

Isuzu 3-pin Adapters

When testing some Isuzu vehicles, a 3-Pin DLC adapter must be used. The adapter required depends on the ECU manufacturer. A chart at the beginning of the Isuzu Specific Instructions indicates which adapter, the Isuzu/Delco (P/N 02001325) or the Isuzu/Hitachi (P/N 02001326) to use for the selected vehicle. Note that the adapter must be used in conjunction with the GM 12/14-Pin adapter (included in the MASTERTECH and TECH 1A kits).



Isuzu/Delco 3-Pin DLC Adapter



Isuzu/Hitachi 3-Pin DLC Adapter

ASIAN IMPORTS JUMPER APPLICATIONS

MANUFACTURER	P/N	CONFIGURATION	SINGLE WIRE
Chrysler Import/Mitsubishi	02002106	2 pin (male)	Yes
Daihatsu	02002073	6 pin	Yes, with shell
Kia/Nissan/1986-88 Toyota	02002075	2 pin (male)	Yes
1983-85 Toyota	02002076	2 pin (male)	Yes
Acura/Honda	02001935	2 pin	Yes, with shell

ASIAN IMPORTS ADAPTER CABLE APPLICATIONS

MANUFACTURER SUPPORTED	VTX P/N	CONFIGURATION
Chrysler Import Mitsubishi Hyundai	02001921	12/14 pin
Mazda	02001922	1/6/17/14 pin
Nissan	02001897	12/14 pin
Toyota (Check)	02001896	21/14 pin
Toyota (TDCL)	02001895	17/14 pin
All Asian Manufacturers with OBD II Compliant Powertrain Systems	02001969	16/14 pin

3. VEHICLE COVERAGE

Following is a list of vehicles that can be tested with the Asian Imports Cartridge. A more detailed chart is included in the Manufacturer Specific Sections.

ACURA

YEAR	MODEL	ENGINE
1986-90	Integra	1.6L I4
1991-94	Integra	1.8L I4
1992-94	Integra	1.7L I4
1986	Legend	2.5L V6
1987-90	Legend Coupe	2.7L V6
1991-94	Legend Coupe	3.2L V6
1987	Legend Sedan	2.5L V6
1988-90	Legend Sedan	2.7L V6
1991-94	Legend Sedan	3.2L V6
1991-94	NSX	3.0L V6
1992-94	Vigor	2.5L V6

CHRYSLER IMPORTS (DODGE)

YEAR	MODEL	ENGINE
1995-98	Avenger	2.0L DOHC I4
1995-98	Avenger	2.5L V6 SOHC
1984-89	Colt	1.6L I4 Turbo
1988-90	Colt	1.6L I4
1988-98	Colt	1.5L I4
1993-98	Colt	1.8L I4
1989	Colt 2000	1.6L I4 Turbo
1989-90	Colt 2000	1.6L I4
1989-92	Colt 2000	1.5L I4
1987-91	Colt Vista	2.0L I4
1992-95	Colt Vista	1.8L I4
1992-95	Colt Vista	2.4L I4

YEAR	MODEL	ENGINE
1989-90	Colt Wagon	1.5L I4
1989-90	Colt Wagon	1.8L I4
1985-89	Conquest	2.6L I4 Turbo
1990-93	Power Ram 50	2.4L I4
1990-93	Power Ram 50	3.0L V6
1990	Ram 50	3.0L V6
1990, 93	Ram 50	2.4L I4
1989	Ram Raider	3.0L V6
1995-98	Sebring	2.0L DOHC I4
1995-98	Sebring	2.5L V6 SOHC
1991-96	Stealth	3.0L SOHC V6
1991-96	Stealth	3.0L DOHC V6
1991-96	Stealth	3.0L DOHC Turbo V6
1989-90	Vista Wagon	2.0L I4

CHRYSLER IMPORTS (EAGLE)

YEAR	MODEL	ENGINE
1989-90	Summit	1.6L I4
1989-96	Summit	1.5L I4
1993-96	Summit	1.8L I4
1992-96	Summit Wagon	1.8L I4
1992-96	Summit Wagon	2.4L I4
1990-94	Talon	1.8L I4
1990-95	Talon	2.0L I4
1990-95	Talon	2.0L I4 Turbo
1996-98	Talon	2.0L I4
1996-98	Talon	2.0L I4 Turbo

CHRYSLER IMPORTS (PLYMOUTH)

YEAR	MODEL	ENGINE
1990-94	Laser	1.8L I4
1990-94	Laser	2.0L I4
1990-94	Laser	2.0L I4 Turbo

DAIHATSU

YEAR	MODEL	ENGINE
1988-92	Charade	1.0L I4
1989-92	Charade	1.3L I4
1990-92	Rocky	1.6L I4

HONDA

YEAR	MODEL	ENGINE
1986-89	Accord	2.0L I4
1990-94	Accord	2.2L I4
1994	Accord	2.2L I4 VTEC
1986	Accord Lxi	2.0L I4
1985	Accord Sei	1.8L I4
1987-94	Civic	1.5L I4
1989-91	Civic	1.6L I4
1992-93	Civic	1.5L I4 VTEC-E
1992-94	Civic	1.6L I4 VTEC
1988	Civic CRX	1.5L I4
1985-87	Civic CRX Si	1.5L I4
1988	Civic CRX Si	1.6L I4
1993	Civic del Sol	1.5L I4 VTEC
1993-94	Civic del Sol	1.6L I4 VTEC
1994	Civic del Sol	1.5L I4
1994	Civic del Sol	1.6L I4
1986	Civic Si	1.3L I4

YEAR	MODEL	ENGINE
1989	Civic_Wagon	1.6L I4
1989	Civic_Wagon	1.5L I4
1989-91	CRX	1.5L I4
1989	CRX HF	1.5L I4
1989-91	CRX Si	1.6L I4
1986-91	Prelude	2.0L I4
1992-94	Prelude	2.2L I4
1992-94	Prelude	2.3L I4
1993-94	Prelude	2.2L I4 VTEC
1990-91	Prelude Si	2.0L I4
1990-91	Prelude Si	2.1L I4

HYUNDAI

YEAR	MODEL	ENGINE
1996-98	Accent	1.5L
1992-95	Elantra	1.6L I4
1993-98	Elantra	1.8L I4
1995	Elantra	1.5L
1990-94	Excel	1.5L I4
1991-95	Scoupe	1.5L I4
1989-91	Sonata	2.4L I4
1989-98	Sonata	3.0L V6
1992-93	Sonata	2.0L I4
1994-98	Sonata	2.0L I4 DOHC
1997-98	Tiburon	1.8L I4
1997-98	Tiburon	2.0L I4

INFINITI

YEAR	MODEL	ENGINE
1991-96	G20	2.0L I4
1996-98	I30	3.0L V6
1993-97	J30	3.0L V6
1990-92	M30	3.0L V6
1990-96	Q45	4.5L V8
1997-98	Q45	4.1L V8
1997-98	QX4	3.3L V6

KIA

YEAR	MODEL	ENGINE
1994	Sephia	1.6L I4

LEXUS

YEAR	MODEL	ENGINE
1990-91	ES250	2.5L V6
1992-94	ES300	3.0L V6
1993-94	GS300	3.0L I6
1990-94	LS400	4.0L V8
1992-94	SC300	3.0L I6
1992-94	SC400	4.0L V8

MAZDA

YEAR	MODEL	ENGINE
1986-89	323	1.6L I4
1988-89	323	1.6L I4 Turbo
1990-94	323	1.8L I4 DOHC
1990-94	323	1.8L I4 SOHC
1991-94	323	1.6L I4 SOHC

YEAR	MODEL	ENGINE
1995	323	1.5L I4
1987-89	323 Wagon	1.6L I4
1983-87	626	2.0L I4
1986-87	626	2.0L I4 Turbo
1988-92	626	2.2L I4
1993-98	626	2.0L I4
1993-98	626	2.5L V6
1988-89	929	3.0L V6
1990-91	929	3.0L V6 DOHC
1990-91	929	3.0L V6 SOHC
1992-93	929	3.0L V6
1994-95	929	3.0L V6 DOHC
1994-97	B Series	2.3L I4
1994-98	B Series	3.0L V6
1994-98	B Series	4.0L V6
1995	B Series	2.5L I4
1986	B2000	2.0L I4
1987-93	B2200	2.2L I4
1987-93	B2600	2.6L I4
1983-85	GLC	1.5L I4
1990-93	Miata	1.6L I4
1994-97,99	Miata	1.8L I4
1996-98	Millenia	2.3L V6
1996-98	Millenia	2.5L V6
1989-95	MPV	2.6L I4
1989-98	MPV	3.0L V6
1992-95	MX3	1.6L I4
1992-95	MX3	1.8L I4
1990-93	MX5	1.6L I4
1994-97,99	MX5	1.8L I4
1988-92	MX6	2.2L I4
1993-97	MX6	2.0L I4

YEAR	MODEL	ENGINE
1993-97	MX6	2.5L V6
1991-94	Navaho	4.0L V6
1988	Protegé	1.6L I4
1988	Protegé	1.6L I4 Turbo
1990-94	Protegé	1.8L I4 DOHC
1990-94	Protegé	1.8L I4 SOHC
1991-94	Protegé	1.6L I4 SOHC
1995-98	Protegé	1.5L I4
1996-98	Protegé	1.8L I4
1984-91	RX7	1.3L R2
1987-95	RX7	1.3L R2 Turbo

MITSUBISHI

YEAR	MODEL	ENGINE
1991-98	3000GT	3.0L V6 DOHC
1991-98	3000GT	3.0L V6 DOHC Turbo
1984-88	Cordia	1.8L I4 Turbo
1992-96	Diamante	3.0L V6 SOHC
1992-96	Diamante	3.0L V6 DOHC
1997-98	Diamante	3.5L V6 SOHC
1993-95	Diamante Wagon	3.0L V6
1990-94	Eclipse	1.8L I4 SOHC
1990-98	Eclipse	2.0L I4 DOHC
1990-98	Eclipse	2.0L I4 DOHC Turbo
1996	Eclipse	2.4L I4 SOHC
1997-98	Eclipse Spyder	2.0L I4 DOHC Turbo
1997-98	Eclipse Spyder	2.4L_I4_SOHC
1992-96	Expo	2.4L I4
1992-96	Expo LRV	1.8L I4
1993-96	Expo LRV	2.4L I4
1985-87	Galant	2.4L I4
1989-93	Galant	2.0L I4 SOHC

YEAR	MODEL	ENGINE
1989-93	Galant	2.0L I4 DOHC
1990-92	Galant	2.0L I4 DOHC Turbo
1993	Galant	2.0L I4 SOHC 16V
1994-95	Galant	2.4L I4 DOHC
1994-98	Galant	2.4L I4 SOHC
1985-88	Mirage	1.6L I4Turbo
1987	Mirage	1.6L I4
1989-92	Mirage	1.6L I4 DOHC
1989-98	Mirage	1.5L I4 SOHC
1993-98	Mirage	1.8L I4 SOHC
1989-96	Montero	3.0L V6
1994-98	Montero	3.5L V6 DOHC
1997-98	Montero Sport	2.4L I4 SOHC
1997-98	Montero Sport	3.0L_V6_SOHC
1990-94	Precis	1.5L I4
1988	Sigma	3.0L V6
1984-87	Starion	2.6L I4 Turbo
1986-89	Starion	2.6L I4 Turbo-I
1984-88	Tredia	1.8L I4 Turbo
1990-95	Truck	2.4L I4
1990-95	Truck	3.0L V6
1987-90	Van/Wagon	2.4L I4

NISSAN

YEAR	MODEL	ENGINE
1984-88	200SX	1.8L I4 Turbo
1984-88	200SX	2.0L I4
1984-88	200SX	3.0L V6
1995-98	200SX	1.6L I4
1995-98	200SX	2.0L I4
1989-98	240SX	2.4L I4
1984-96	300ZX	3.0L V6

YEAR	MODEL	ENGINE
1993-98	Altima	2.4L I4
1990	Axxess	2.4L I4
1998	Frontier	2.4L I4
1985-98	Maxima	3.0L V6
1991-94	NX Coupe	1.6L I4
1991-94	NX Coupe	2.0L I4
1986-93	Pathfinder	2.4L I4
1986-96	Pathfinder	3.0L V6
1997-98	Pathfinder	3.3L V6
1987-90	Pulsar NX	1.6L I4
1988-89	Pulsar NX	1.8L I4
1993-98	Quest	3.0L V6
1987-98	Sentra	1.6L I4
1991-98	Sentra	2.0L I4
1985-89	Stanza	2.0L I4
1990-92	Stanza	2.4L I4
1995-96	Stanza	2.4L I4
1986-93	Truck	2.4L I4
1986-95	Truck	3.0L V6
1995-97	Truck	2.4L I4
1989	Van	2.4L I4

SUBARU

YEAR	MODEL	ENGINE
1986-89	3-Door	1.8L
1983-84	BRAT	1.8L
1998	Forester	2.5L
1983-84	Hardtop	1.8L
1984	Hardtop	1.6L
1998-94	Hatchback	1.6L
1998-94	Hatchback	1.8L
1993-97	Impreza	1.8L

YEAR	MODEL	ENGINE
1996-98	Impreza	2.2L
1998	Impreza	2.5L
1987-90	Justy	1.2L
1990-98	Legacy	2.2L
1990-91	Loyale	1.8L
1983-84	Sedan	1.6L
1983-89	Sedan	1.8L
1992-97	SVX	2.5L
1983-89	Wagon	1.8L
1985-91	XT	1.8L
1988-91	XT6	2.7L

TOYOTA

YEAR	MODEL	ENGINE
1985-94	4-Runner	2.4L I4
1985-94	4-Runner	3.0L V6
1983-91	Camry	2.0L I4
1989-91	Camry	2.5L V6
1992-94	Camry	2.2L I4
1992-94	Camry	3.0L V6
1983-85	Celica	2.4L I4
1986-93	Celica	2.0L I4
1990-93	Celica	1.6L I4
1990-94	Celica	2.2L I4
1994	Celica	1.8L I4
1985-94	Corolla	1.6L I4
1993-94	Corolla	1.8L I4
1983-88	Cressida	2.8L I6
1989-92	Cressida	3.0L I6
1988-92	Land Cruiser	4.0L I6
1993-94	Land Cruiser	4.5L I6
1986-90	MR2	1.6L I4

YEAR	MODEL	ENGINE
1991-94	MR2	2.0L I4 Turbo
1991-94	MR2	2.2L I4
1992-94	Paseo	1.5L I4
1991-94	Previa	2.4L I4
1983	Starlet	1.3L I4
1983-86	Supra	2.8L I6
1986-94	Supra	3.0 I6 Turbo
1986-94	Supra	3.0L I6
1993-94	T-100	3.0L V6
1989-94	Tercel	1.5L I4
1984-94	Truck	2.4L I4
1985-94	Truck	3.0L V6
1984-85	Van	2.0L I4
1986-89	Van	2.2L I4

4. TEST MODES AVAILABLE

The Asian Imports Cartridge provides the following diagnostic test modes. Not all vehicles are equipped with electronic systems capable of using all of the test modes. Refer to the charts on the following pages for a list of tests available for each vehicle. Only test modes available for the selected vehicle system are displayed in the Select Mode menu.

AVAILABLE TEST MODES

F0: DATA LIST Displays diagnostic data parameters in pre-selected or user selected pairs.

F1: DTC ENTRY The DTC Entry mode is designed for vehicles that have On Board Diagnostics (OBD) capability, but do not have a Data Link Connector (DLC). The DTC Entry mode has five submodes:

- Submode F0: HOW TO READ displays information about how to set the vehicle controller in the mode so you can manually read stored DTCs.
- Submode F1: ENTER DTC(s) allows you to input a DTC to the tester that was manually read from ECU LEDs, analog voltmeter, or the vehicle Malfunction Indicator Lamp (MIL). The DTC description is then displayed on the tester screen.
- Submode F2: DTC LIST allows you to scroll through a list of DTCs applicable to the vehicle being tested.
- Submode F3: REVIEW DTC allows you to review DTCs that have been selected or entered into the tester memory.
- Submode F4: CLEAR DTC(s) displays information about how to clear the DTCs from the vehicle being tested, or from the tester memory.

F2: DTC The DTC mode is designed for vehicles that have On Board Diagnostics (OBD) capability, and have a Data Link Connector (DLC). The DTC mode has four submodes:

- Submode F1: READ DTCs reads and displays stored Diagnostic Trouble Codes stored in the ECU. (On Inactive Toyota or Lexus systems, this Submode is F1: READ/ENTER DTCs.)
- Submode F2: DTC LIST allows you to scroll through a list of DTCs applicable to the vehicle being tested.
- Submode F3: REVIEW DTC allows you to review DTCs that have been selected or entered into the tester memory.
- Submode F4: CLEAR DTC(s) automatically clears ECU DTCs or describes how to clear DTCs from the vehicle being tested, or clears DTCs from the tester memory.
- Submode F5: SENSITIVE DTC for Toyota and Lexus vehicles commands the engine ECU to check the system more frequently for the environment required to set DTCs. The increased sensitivity is more efficient for identifying intermittent problems.

F3: SNAPSHOT Records data before and after the occurrence of an intermittent trouble condition. Trigger conditions are selectable and include trigger on a specific DTC, any DTC, or by a manual key press.

F4: OBD CONTROLS Allows manufacturer dependent test for specialized diagnostics. Tests available for each vehicle are described in the manufacturer specific sections.

F5: SYSTEM TESTS This mode is used to select a submenu for vehicle preparation prior to testing.

F8: INFORMATION This mode contains submodes with information about ECU, DLC, SCC and DJC locations. It also contains vehicle ID information.

TEST MODES AVAILABLE

Following is a list of test modes available for each manufacturer. Only test modes available for the selected vehicle are displayed in the test mode menus. The functions and operating procedures for each test mode are described in the Common Test Modes section.

MAKE	DATA LIST	READ-INESS	DTC ENTRY	DTC	SNAP-SHOT	OBD CON-TROLS	SYSTEM TESTS	INFOR-MATION	EN-HANCD MODE*	PRINT MODE**
ACURA			•				•	•		•
CHRY IMP	+	+	•	• +	+	+	• +	• +	+	• +
DAIHATSU			•				•	•		•
HONDA			•				•	•		•
HYUNDAI	+	+	•	• +	+	+	• +	• +	+	• +
INFINITI	+	+	•	+	+	+	• +	• +	+	• +
KIA			•				•	•		•
LEXUS	•			•	•		•	•	•	•
MAZDA	+	+	•	• +	+	• +	• +	• +	+	• +
MITSUBISHI	+	+	•	• +	+	+	• +	• +	+	• +
NISSAN	+	+	•	• +	+	• +	• +	• +	+	• +
SUBARU	+	+	•	+	+	+	• +	• +	+	• +
TOYOTA	•			•			•	•	•	•

*The Enhanced Mode is a Mastertech function that provides expanded data list display capabilities.
**Print Mode supports Data List, Snapshot and current or available DTCs, when using the optional VP-411 printer.
• OBD & OBD I
+ OBD II

NOTE

Isuzu and Suzuki Test Modes are described in the Isuzu and Suzuki Operator's Manuals.

SYSTEM TESTS AVAILABLE

System Tests Mode is available for each make of vehicle.

System Tests contains submode F0: Prep Vehicle. This submode gives instructions for proper vehicle preparation prior to testing to ensure accurate test results.

OBD CONTROLS AVAILABLE

VEHICLE	OBD CONTROLS SUBMODES
Mazda	F0: Switch Test F1: O2S Monitor
Nissan	F0: AFR Monitor A F1: AFR Monitor B F2: Switch Test F3: RT DTC Monitor
All Asian Manufacturers with OBD II compliant Powertrain systems that support this control	F0: EVAP Leak

NOTE

Isuzu and Suzuki OBD Controls are described in the Isuzu and Suzuki Operator's Manuals.

5. GETTING STARTED

Before operating the ASIAN IMPORTS CARTRIDGE, do the following:

1a. **TECH 1 OR TECH 1A TESTER**

Insert the cartridge into the Master Cartridge slot on the bottom of the tester. (Verify that no other "Master" cartridge is installed in the top slot). Refer to the TECH 1 or TECH 1A Operator's Manual for further information.

1b. **MASTERTECH TESTER**

Insert the cartridge into the slot at the top of the tester. Refer to the Mastertech Operator's Manual for further information. Make sure the tester is turned OFF.

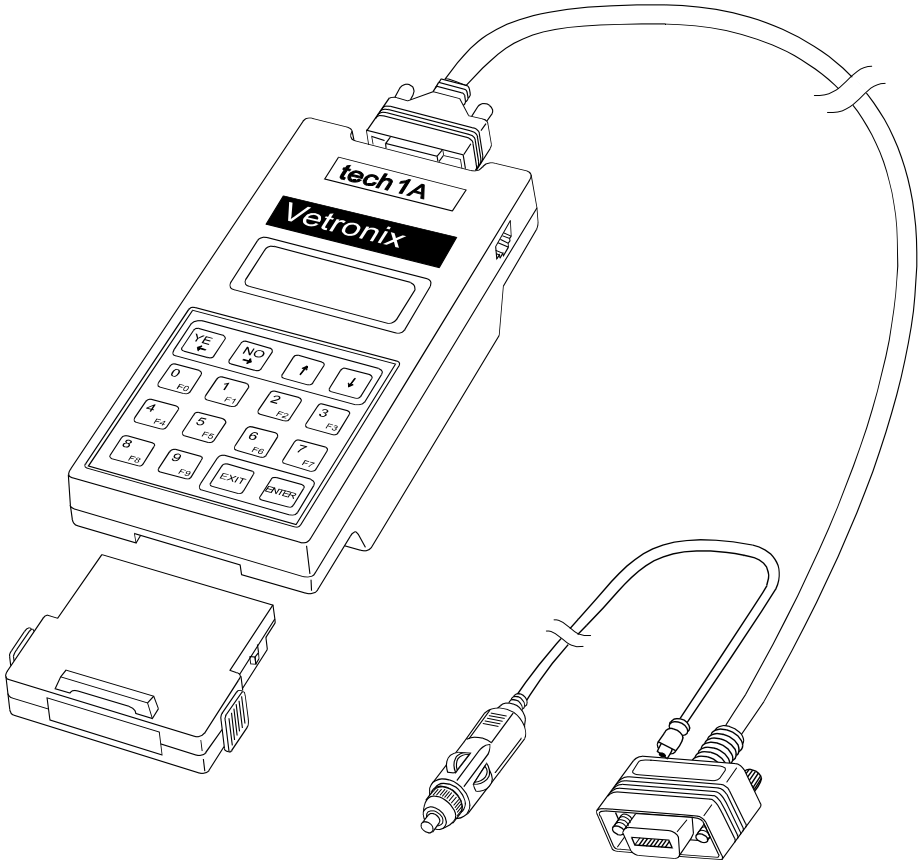
When testing Lexus/Toyota and OBDII compliant vehicles, the Asian Imports Cartridge can also be operated in Enhanced Mode when a program card is installed in the Mastertech. Refer to the Program Card Operator's Manual for Enhanced Mode operating instructions.

2. Connect the DLC cable to the tester and tighten the screws.

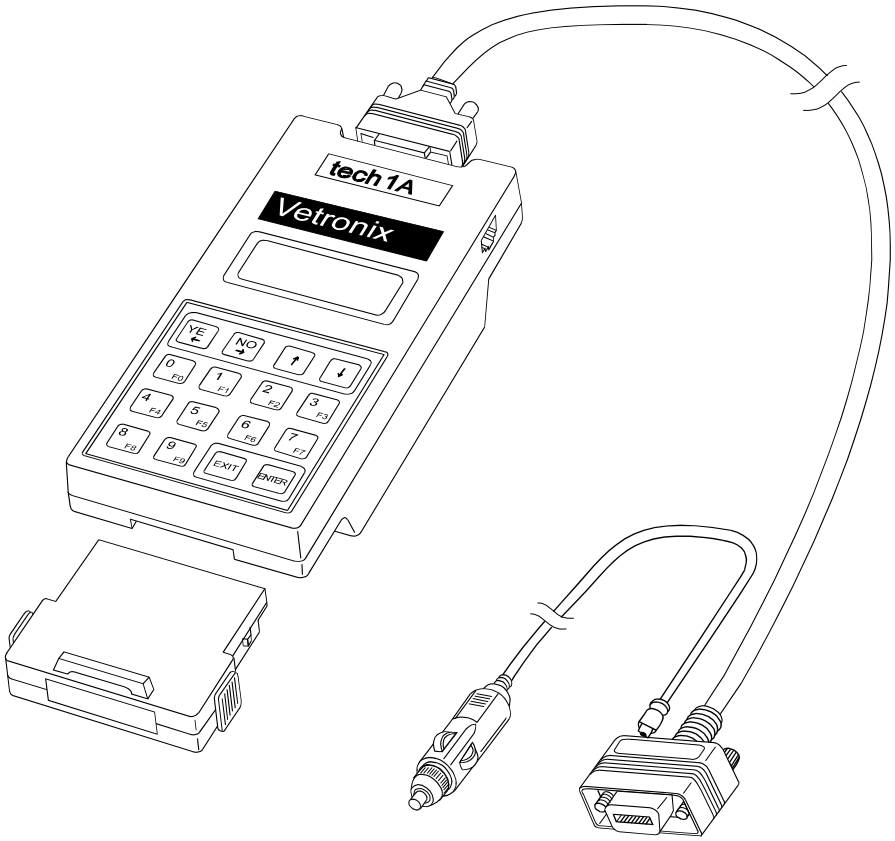
NOTE	The DLC cable is not required when testing Acura, Daihatsu, and Honda vehicles. It is also not required when testing select vehicles by the following manufacturers: Chrysler Imports, Hyundai, Mitsubishi, Infiniti, Kia, Nissan, and Subaru. Refer to the manufacturer specific instruction sections for further details.

3. Connect the DC Power Cable to the end of the DLC cable.
4. Refer to the manufacturer's specific instructions section for the vehicle you are testing for the following information:
   - Installing the appropriate adapter(s) on the DLC cable
   - Connecting the tester to the vehicle, or setting up the ECU for manual DTC referral.
   - Powering up the tester
   - Selecting the vehicle you are testing
5. When the Select Mode menu is displayed, refer to the Common Test Modes section to select and operate the test modes.

Mastertech Tester, Cartridge and Cables



Tech 1A Tester, Cartridge and Cables



Tech 1 Tester, Cartridge and Cables

COMMON TEST MODES I

OBD, OBD I SYSTEMS

1. Selecting Test Modes 2
2. Mode F0: Data List 3
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    - Submode F1: Enter DTC(s) 6
    - Submode F2: DTC List 8
    - Submode F3: Review DTC 9
    - Submode F4: Clear DTC(s) 11
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    - Submode F1: Read DTC(s) 13
    - Submode F2: DTC List 15
    - Submode F3: Review DTC 16
    - Submode F4: Clear DTC(s) 18
5. Mode F3: Snapshot 20
6. Mode F4: OBD Controls 27
7. Mode F5: System Tests 28
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    - Submode F1: DLC Location 30
    - Submode F2: SCC Location 31
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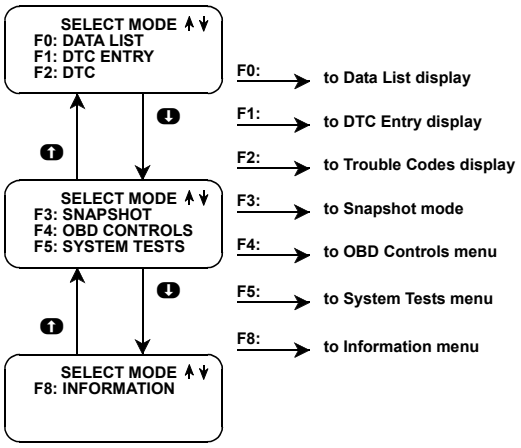
    - Submode F4: DJC Location 33
    - Submode F5: ECU Location 34

1. SELECTING TEST MODES

The Asian Imports Cartridge makes selecting a test mode easy by displaying a "Test Mode Menu." To select a test mode, simply press the tester key listed to the left of the test mode on the menu.

The tester automatically scrolls up to three test modes at a time. Pressing the ↓ key turns off the automatic scrolling and "freezes" the menu. The menu may then be manually scrolled by pressing the ↑ key. Regardless of which test modes are displayed, any available test mode can be selected at any time from the menu.



When F4: OBD Controls mode is selected, a submenu of specific tests available for the selected vehicle is displayed. The tester displays only the test modes available for the selected vehicle.

Once you have selected a test mode, operation begins. Detailed operating instructions for each test mode are provided in the following sections.

ACTIVE KEYS	
F0 - F9	Select test modes and submodes.
↑	Scroll menu down.
↓	"Freeze" menu.
EXIT	Return to the Select Mode menu, or to the OBD Controls menu.

2. MODE F0: DATA LIST

The purpose of the Data List mode is to monitor engine or transmission data parameters. When Data List is selected, the tester displays ECU data parameters in pre-programmed pairs. You can also create your own pairs.

If you are using a Mastertech tester and the Multi-Function Program Card is installed, the Enhanced mode is available when testing Lexus and Toyota vehicles.

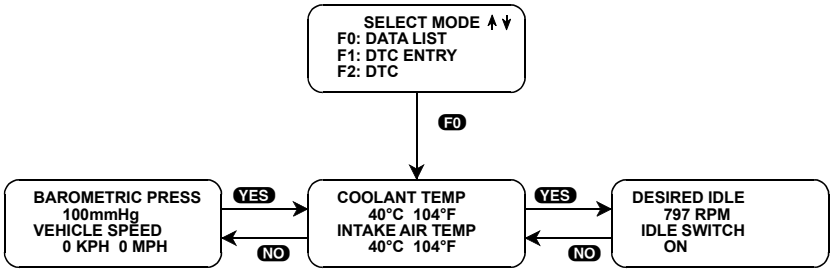
To select the Data List mode, do the following:

1. Press F0 to select the Data List mode from the Select Mode menu.
2. To see the other pre-programmed data pairs available for the selected system, press either the YES or NO key. The YES key will cause the tester to scroll forwards through the list of pre-programmed pairs. The NO key will cause backwards scrolling. Holding either key will cause continuous scrolling. You can also create data parameter pairs different from the pre-programmed pairs, as explained in *Create Your Own Data Pairs*.

   A description of all engine and transmission data parameters available for each manufacturer that is capable of displaying data parameters is included in that Manufacturer's specific section. Not all data parameters are transmitted by every vehicle.
3. The data parameters can be printed if the tester is connected to a compatible serial printer.

   Refer to the tester operator's manual for instructions on connecting the printer to the tester and printing the data parameters.
4. You may return to the Select Mode menu at any time by pressing EXIT.

An example of the operation of the Data List mode is summarized in the following flow diagram. The data displayed may be different for the selected vehicle.



Data List Mode

Create Your Own Data Pairs

You can create data parameter pairs different from the pre-programmed pairs. Any two parameters that can be monitored can be made into a pair.

New data pairs are created simply by scrolling either the bottom or top display parameter, while the other display parameter is fixed. Pressing F0 causes the top display parameter to be fixed, which is indicated with a "*" in the left column of the second line of the display, as shown in Figure A. Pressing F1 causes the bottom display parameter to be fixed, as shown in Figure B. To "unfix" the top parameter, press F1. Press

F0 to “unfix” the lower parameter. The tester won't allow both top and bottom parameters to be fixed at the same time.

As an example, let's say you wish to create a pair with ENGINE SPEED and BARO. To do so, scroll through the pre-programmed pairs with the YES or NO key until you find a pair with ENGINE SPEED. Fix ENGINE SPEED by pressing F0 if ENGINE SPEED is the top parameter, F1 if it is the bottom. Then scroll the other half of the display with either the YES or NO key until BARO is displayed.

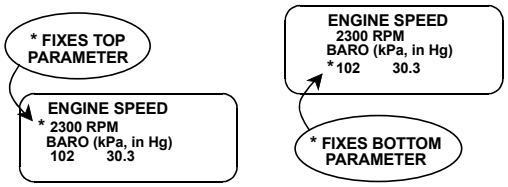
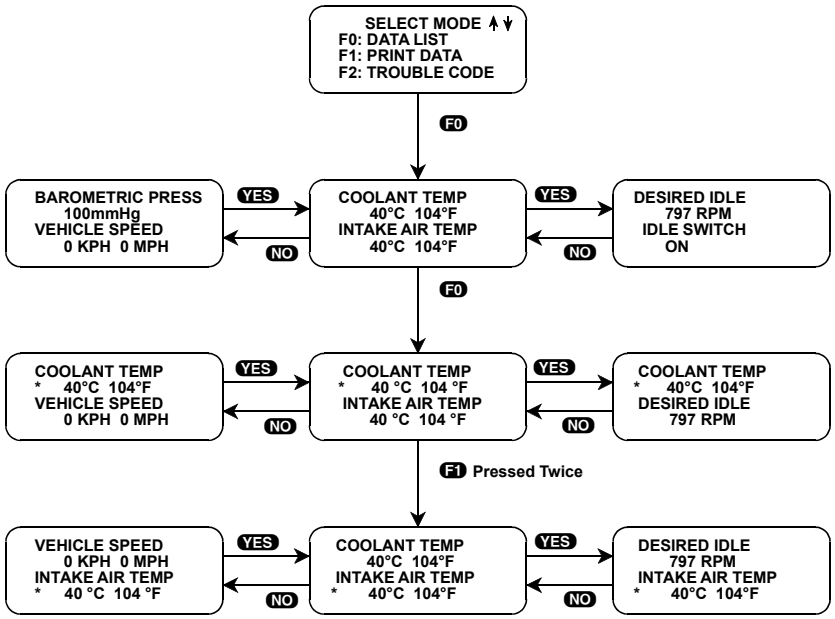


Figure A

Figure B



Data List Mode

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as “fixed” for creating your own data pairs.
F1	Mark bottom displayed parameter as “fixed” for creating your own data pairs.
EXIT	Return to test mode menu.

3. MODE F1: DTC ENTRY

The DTC Entry mode is designed for vehicles that are equipped with On Board Diagnostics, which require DTCs to be read from the ECU using a manual method.

Up to five submodes are available when Mode F1: DTC Entry is selected. Only submodes available for the selected vehicle are displayed in the submode menu. A description of the submodes follows. Operating instructions for the submodes are on the following pages.

How to select and operate the DTC Entry submodes is explained on the following pages. Detailed operating instructions for the selected vehicle are included in the Manufacturer Specific Instructions.

The DTC Entry submodes include:

Submode F0: How To Read	On vehicles with no DLC, DTCs are displayed only after the ECU is put into a diagnostic state. This submode provides screen text information which explains how to setup the ECU for DTC retrieval.
Submode F1: Enter DTC(s)	Most early OBD systems do not have a DLC, so the codes must be manually read from the ECU LEDs, from an analog voltmeter, or from the dashboard mounted Malfunction Indicator Lamp (MIL). After codes are obtained using information provided in submode F0: HOW TO READ, the codes may be entered into the tester in Submode F2: ENTER DTCs, and the tester displays a description of the code.
Submode F2: DTC List	The tester displays a list of DTCs available for the selected vehicle. From this list the DTC obtained using F0: HOW TO READ can be selected (or deselected), using the YES and NO keys without the need to enter the DTC numerically.
Submode F3: Review DTC	The REVIEW DTC submode displays DTCs that have been entered or selected and stored in the tester memory.
Submode F4: Clear DTC(s)	Clearing DTCs from ECUs on import vehicles sometimes requires special manual steps not related to the tester. The Clear DTC menu has a selection for clearing DTCs from the selected vehicle (e.g., removing a certain fuse or disconnecting the battery). The Clear DTC submode also contains a selection for clearing DTCs entered into the tester memory.

SUBMODE F0: HOW TO READ

The How To Read submode explains how to set up the selected vehicle to display stored DTCs on the dashboard Malfunction Indicator Lamp (MIL). Once the DTCs are displayed, you can enter the code numbers into the tester, as described in submode F1: ENTER DTC, for a description of the code.

To select the How To Read submode, do the following:

1. Press F1 to select DTC Entry from the Select Mode menu.
2. Press F0 to select How To Read from the DTC Entry menu.
3. Use the ↑ key to scroll through the How to Read DTC instructions. Press ↓ to hold a display.
4. For some vehicles that require you to watch the flashing LEDs on the ECU, the tester gives you the option of displaying the location of the ECU. If you are in doubt about the location of the ECU press F8 to select Information from the Select Mode menu, then press F5 to select ECU Location.

5. The following diagram shows an example of How To Read DTC displays. Remember, the displays may be different for the vehicle you are testing.
6. Press EXIT to return to the DTC Entry menu.

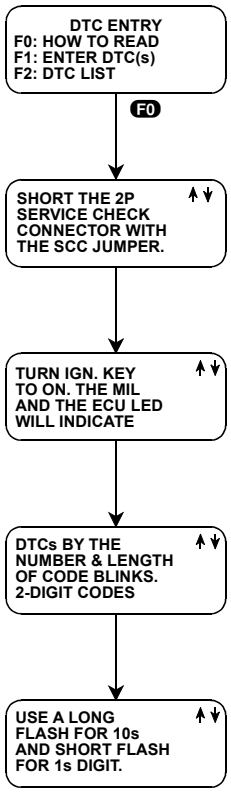

DTC ENTRY
F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F0
SHORT THE 2P SERVICE CHECK CONNECTOR WITH THE SCC JUMPER.
TURN IGN. KEY TO ON. THE MIL AND THE ECU LED WILL INDICATE
DTCs BY THE NUMBER & LENGTH OF CODE BLINKS. 2-DIGIT CODES
USE A LONG FLASH FOR 10s AND SHORT FLASH FOR 1s DIGIT.

FIGURE 1-1. Example Of How To Read DTCs Displays

ACTIVE KEYS	
↑	Scroll through displayed instructions.
↓	Hold a displayed screen.
EXIT	Return to DTC Entry menu.

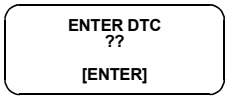
SUBMODE F1: ENTER DTC(S)

The Enter DTC submode displays a description of DTCs entered into the tester memory. A list of DTC numbers available for the selected vehicle is available by using submode F2: DTC LIST.

To select the Enter DTC(s) submode, do the following:

1. Press F1 to select DTC Entry from the Select Mode menu.
2. Press F1 to select Enter DTC(s) from the DTC Entry menu.

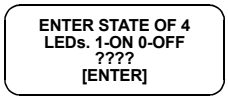
3. Use the tester keypad to enter the DTC displayed on the vehicle ECU, then press **ENTER**. An example of the Enter DTC display screen is shown in the following figure.



ECU LED

Some Honda and Acura vehicles have a single ECU mounted LED that flashes DTCs. Refer to the Honda and Acura specific sections that describe how to read DTCs on ECU mounted LEDs. In addition, some Subaru vehicles use an ECU mounted single LED (O2S monitor lamp) to flash DTCs.

1985-86 model Honda vehicles have four ECU mounted LEDs that flash DTCs. When entering DTCs for these vehicles, the tester displays a flashing "?" where the state of the LED is to be entered. Press **1** if the LED is on or press **0** if the LED is off. Repeat this process until all four digits have been entered, then press **ENTER**.



Some Nissan vehicles have two ECU mounted LEDs that flash DTCs and some Nissan and Infiniti vehicles have a single ECU mounted LED that flashes DTCs. Refer to the Nissan and Infiniti specific sections that describe how to read DTCs on ECU mounted LEDs.

Malfunction Indicator Lamp (Check Engine Light)

Late model Acura, Chrysler Imports, Honda, Hyundai, Infiniti, Nissan, Mitsubishi, and Subaru vehicles have an instrument panel malfunction indicator lamp (MIL) that flashes DTCs. In addition, all Daihatsu and Kia vehicles use a MIL for DTC output. Refer to the manufacturer specific section that describes how to read DTCs from the MIL.

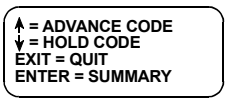
Analog Voltmeter

Some Chrysler Imports, Mitsubishi, and Hyundai vehicles require the use of an analog voltmeter to read DTCs. In this case, the meter is set to the 20 volt scale and meter needle sweeps are counted. Refer to the manufacturer specific section that describes how to read DTCs using an analog voltmeter.

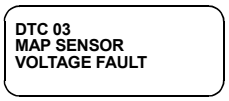
Mastertech Oscilloscope

For the automobile manufacturers that mention the use of an analog voltmeter to read manual DTCs, the Mastertech Oscilloscope may be used. Set up the single channel oscilloscope and make connections the same way as the analog voltmeter (above). Choose the 20v/division scale and a slow time/division (e.g., 1-2 sec/division) the DTCs will be shown as a waveform on the display.

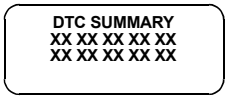
4. When **ENTER** is pressed, the tester displays the DTC number and a short description of the code.
5. After you enter the DTC, the tester asks for additional trouble code entry. Press **YES** to enter another DTC. If **NO** is pressed, the tester displays an instruction screen describing the functions available.



6. Press ↑ to move to the next DTC. If you wish to hold a DTC screen, press ↓ to freeze the automatic scrolling feature.



7. Press ENTER to view a summary screen of all entered DTCs.



8. Press EXIT to return to the DTC Entry menu.

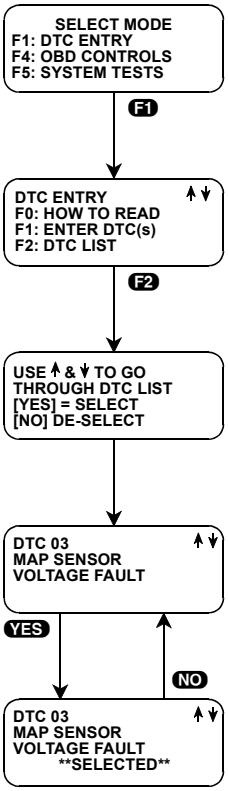
ACTIVE KEYS	
ENTER	Enter the displayed DTC.
YES	Enter another DTC.
NO	Advance to instruction screen.
F0 - F9	Enter DTC number.
↑	Move to the next DTC.
↓	Stop the automatic scrolling.
EXIT	Return to DTC Entry menu.

SUBMODE F2: DTC LIST

The DTC List submode provides a list of all DTC numbers and a description of each DTC available for the selected vehicle. DTCs may be selected by pressing the YES key, or deselected by pressing the NO key. The entire DTC list can be printed, if the tester is connected to a compatible serial printer.

To select the DTC List submode, do the following:

1. Press F1 to select DTC Entry from the Select Mode menu.
2. Press F2 to select DTC List from the DTC Entry menu.
3. An instruction screen explains how to view, select, and deselect the DTCs. Press ↑ to display the DTC List.
4. Use the ↑ and ↓ keys to scroll through the DTCs.
5. Press YES to select a displayed DTC. “SELECTED” is displayed at the bottom of the screen. To deselect a DTC, press NO when the code is displayed.
6. Press F8 to print the entire DTC list.
7. Press EXIT to return to the DTC Entry menu.



Example of DTC List Displays

ACTIVE KEYS	
↑ ↓	Scroll through displayed DTCs.
YES	Select displayed DTC.
NO	Deselect a selected DTC.
F8	Print available DTC list.
EXIT	Return to DTC Entry menu.

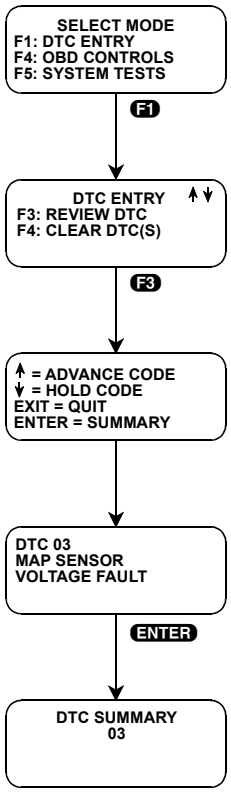
SUBMODE F3: REVIEW DTC

The Review DTC submode displays a list of DTCs stored in the tester memory. The list of DTCs can be printed, if the tester is connected to a compatible serial printer.

To select Review DTC submode, do the following:

1. Press F1 to select DTC Entry from the Select Mode menu.
2. Press F3 to select Review DTC from the DTC Entry menu.
3. An instruction screen explains how to view the DTCs. Press ↑ to display the stored DTCs.

4. The DTC number is displayed on the first line, followed by a description of the DTC. Press ↑ to advance to the next code, or press ↓ to hold the displayed code.
5. When all DTCs have been displayed, press ENTER to display a summary screen of all entered DTCs.
6. Press F8 to print a list of selected (current) DTCs.
7. Press EXIT to return to the DTC Entry menu.



Example of Review DTC Displays

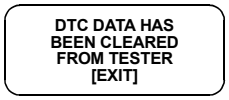
ACTIVE KEYS	
↑, ↓	Advance to next DTC or hold displayed DTCs.
ENTER	Display summary screen.
F8	Print entered or selected (current) DTCs.
EXIT	Return to DTC Entry menu.

SUBMODE F4: CLEAR DTC(S)

The Clear DTC submode allows you to clear all DTCs stored in the tester, and displays instructions for clearing active DTCs stored in the vehicle ECUs.

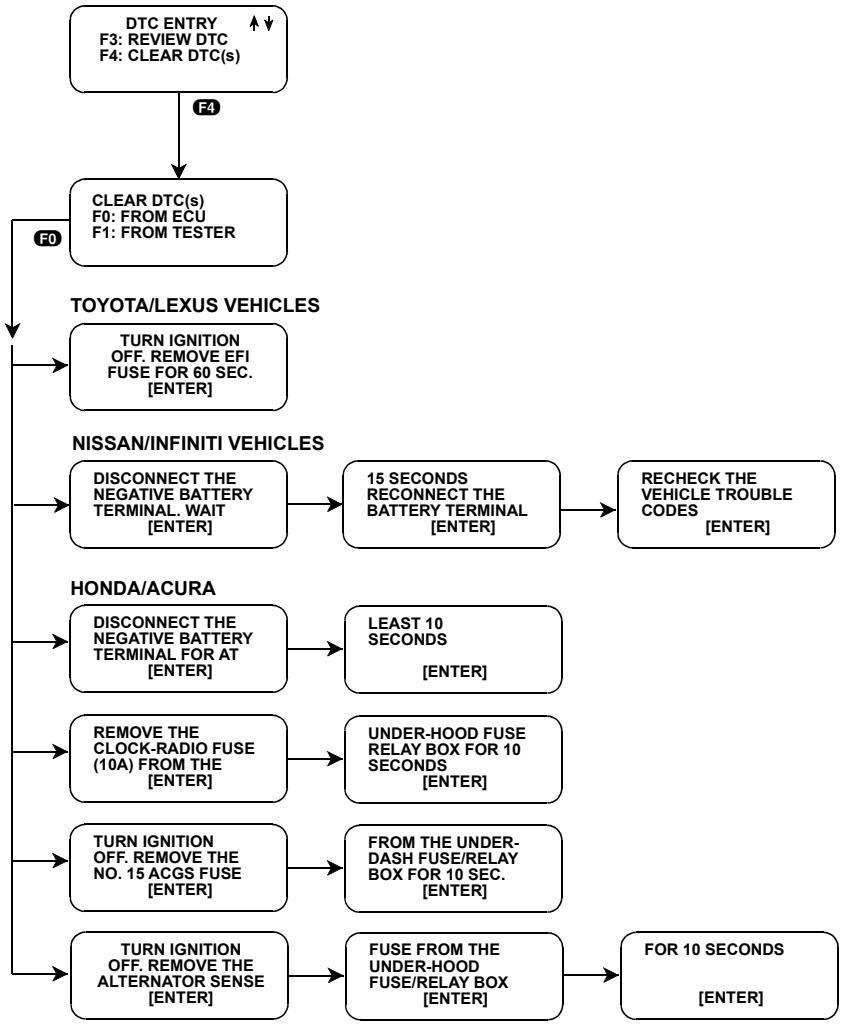
To select Clear DTC(s) submode, do the following:

1. Press F1 to select DTC Entry from the Select Mode menu.
2. Press F4 to select Clear DTC from the DTC Entry menu.
3. For some vehicles, the tester will ask if you want to clear codes from the vehicle or from the tester. Press F0 for information screens that describe how to clear ECU codes, or press F1 to clear entered or selected codes that are stored in the tester memory.
4. When F0: FROM ECU is selected, one or more instruction screens explain how to clear the DTCs. The instructions are specific to the vehicle selected. Examples of Clear DTC instructions are shown on the following page.
5. When F1: FROM TESTER is selected, the DTCs stored in the tester are cleared.



6. Press EXIT to return to the DTC Entry menu.

ACTIVE KEYS	
F0	Display how to clear ECU codes information.
F1	Clear codes stored in tester memory.
ENTER	Return to DTC Entry menu.
EXIT	Return to DTC Entry menu.


DTC ENTRY
F3: REVIEW DTC
F4: CLEAR DTC(s)
F4
CLEAR DTC(s)
F0: FROM ECU
F1: FROM TESTER
F0
TOYOTA/LEXUS VEHICLES
TURN IGNITION OFF. REMOVE EFI FUSE FOR 60 SEC. [ENTER]
NISSAN/INFINITI VEHICLES
DISCONNECT THE NEGATIVE BATTERY TERMINAL. WAIT [ENTER]
15 SECONDS RECONNECT THE BATTERY TERMINAL [ENTER]
RECHECK THE VEHICLE TROUBLE CODES [ENTER]
HONDA/ACURA
DISCONNECT THE NEGATIVE BATTERY TERMINAL FOR AT [ENTER]
LEAST 10 SECONDS [ENTER]
REMOVE THE CLOCK-RADIO FUSE (10A) FROM THE [ENTER]
UNDER-HOOD FUSE RELAY BOX FOR 10 SECONDS [ENTER]
TURN IGNITION OFF. REMOVE THE NO. 15 ACGS FUSE [ENTER]
FROM THE UNDER-DASH FUSE/RELAY BOX FOR 10 SEC. [ENTER]
TURN IGNITION OFF. REMOVE THE ALTERNATOR SENSE [ENTER]
FUSE FROM THE UNDER-HOOD FUSE/RELAY BOX [ENTER]
FOR 10 SECONDS [ENTER]

Examples of Clear DTC Instructions

4. MODE F2: DTC(S)

The purpose of the F2: DTC test mode is to read DTCs stored in the ECU on supported vehicles equipped with a Data Link Connector (DLC). A list of the DTCs for each vehicle is included in the Manufacturer Specific sections.

Up to four submodes are available when Mode F2: DTC is selected. Only submodes available for the selected vehicle are displayed in the submode menu. Below is a description of the submodes. Operating instructions for the submodes are on the following pages.

The DTC Mode submodes include:

Submode F1: Read DTC(s)	The tester reads and displays DTCs stored in the ECU. (On Inactive Toyota or Lexus systems, this submode is F1: READ/ENTER DTCs. Refer to the Toyota or Lexus Specific Instructions.)
Submode F2: DTC List	The tester displays a list of DTCs available for the selected vehicle. From this list the DTC can be selected (or deselected), using the YES and NO keys without the need to enter the DTC numerically.
Submode F3: Review DTC	REVIEW DTC displays all DTCs that have been selected or entered into the tester memory.
Submode F4: Clear DTC(s)	Clearing DTCs from ECUs on import vehicles sometimes requires special steps not related to the tester. This submode has a selection which automatically clears or describes how to clear ECU DTCs (e.g., removing a certain fuse or disconnecting the battery). This submode has a selection for clearing DTCs entered into the tester memory using DTC Entry.
Submode F5: Sens DTC	On certain Toyota and Lexus vehicles, the engine ECU can be commanded into a Sensitive DTC detection mode. This sub mode increases the chance of capturing an intermittent fault within the engine control system.

SUBMODE F1: READ DTC(S)

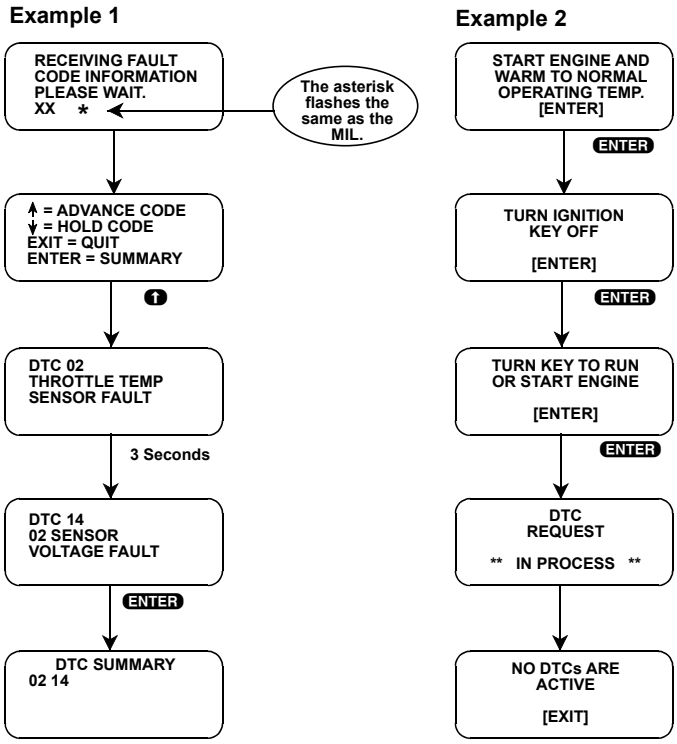
The purpose of the Read DTC submode is to read DTCs stored in the ECU on vehicles equipped with On Board Diagnostics (OBD) and a Data Link Connector (DLC).

Lists of the DTCs for each vehicle are included in the Manufacturer Specific Sections of this manual.

To select Read DTC(s) submode, do the following:

1. Press F2 to select DTCs from the Select Mode menu.
2. Press F1 to select Read DTCs from the DTC Menu.
3. The tester will display screens such as in the examples on the following page. The tester may display instruction screens to guide you to connect the appropriate adapter and to properly prepare the vehicle.
4. If no codes are present, the tester informs you. Press EXIT to return to the Select Mode menu.
5. If DTCs are present, the tester displays an instruction screen for reading the DTCs. Press ↑ to display the first code.

6. The tester automatically displays each code and a description for three seconds. An example is shown on the following page. Remember that the DTCs displayed will be different depending on the vehicle selected.
7. A DTC can be "held" by pressing the ↓ key while the code is displayed. This gives you more time to record the code. Press the ↑ key to resume display of the DTCs.
8. Press ENTER to display a summary of the DTCs.
9. Press F8 to print a list of the DTCs read by the tester.
10. Press EXIT to terminate the Read DTC mode and return to the Select Mode menu.
11. To clear the codes, select F4: Clear DTC(s) from the Select Mode menu. Refer to Submode F4 for instructions on clearing the DTC(s).



Examples Of Read DTC(s)

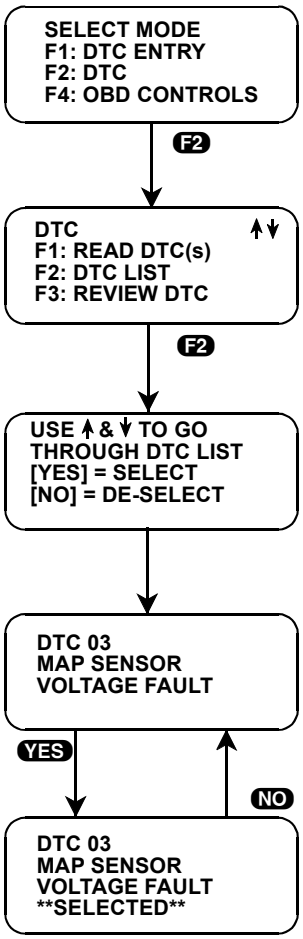
ACTIVE KEYS	
↑	Advance display to next DTC.
↓	Holds presently displayed DTC.
ENTER	Displays DTC summary.
F8	Prints list of current DTCs.
EXIT	Return to Select Mode menu.

SUBMODE F2: DTC LIST

The DTC List submode provides a list of all DTC numbers and a description of each DTC available for the selected vehicle. DTCs may be selected by pressing the YES key, or deselected by pressing the NO key. The entire DTC list can be printed, if the tester is connected to a compatible serial printer.

To select DTC List submode, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F2 to select DTC List from the DTC menu.
3. An instruction screen explains how to view, select, and deselect the DTCs. Press ↑ to display the DTC List.
4. Use the ↑ and ↓ keys to scroll through the DTCs.
5. Press YES to select a displayed DTC. “SELECTED” is displayed at the bottom of the screen. To deselect a DTC, press NO when the code is displayed.
6. Press F8 to print the entire DTC list.
7. Press EXIT to return to the DTC menu.



Example of DTC List Displays

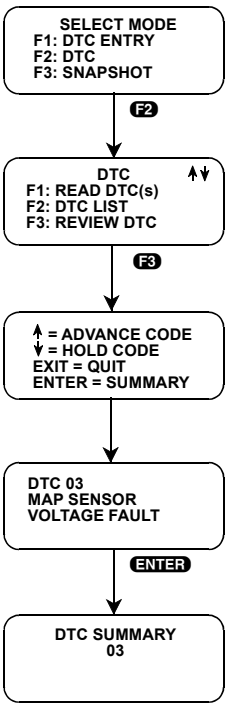
ACTIVE KEYS	
↑ ↓	Scroll through displayed DTCs.
YES	Select displayed DTC.
NO	Deselect a selected DTC.
F8	Print available DTC list.
EXIT	Return to DTC Entry menu.

SUBMODE F3: REVIEW DTC

The Review DTC submode displays a list of DTCs that have been entered or selected. The DTCs can be printed, if the tester is connected to a compatible serial printer.

To select Review DTC submode, do the following:

1. Press F2 to select DTC Entry from the Select Mode menu.
2. Press F3 to select Review DTC from the DTC menu.
3. An instruction screen explains how to view the DTCs. Press ↑ to display the stored DTCs.
4. The DTC number is displayed on the first line, followed by a description of the DTC. Press ↑ to advance to the next code, or press ↓ to hold the displayed code.
5. When all DTCs have been displayed, press ENTER to display a summary screen of all entered DTCs.
6. Press F8 to print entered or selected (current) DTCs.
7. Press EXIT to return to the DTC Entry menu.



Example of Review DTC Instructions

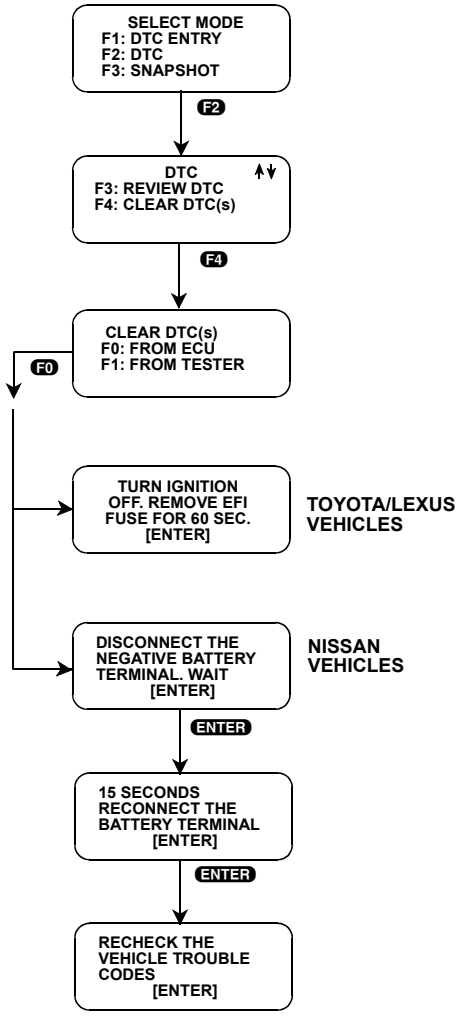
ACTIVE KEYS	
↑	Advance to next DTC.
↓	Hold displayed DTC.
ENTER	Display summary screen of entered DTCs.
F8	Print entered or selected (current) DTCs.
EXIT	Return to DTC Entry menu.

SUBMODE F4: CLEAR DTC(S)

The Clear DTC submode allows you to clear all DTCs stored in the tester, and provides instructions for clearing active DTCs stored in the vehicle ECU.

To select Clear DTC(s) submode, do the following:

1. Press F2 to select DTC from the Select Mode menu.
2. Press F4 to select Clear DTC from the DTC menu.
3. For some vehicles, the tester asks if you want to clear codes from the vehicle or from the tester. Press F0 for information screens that describe how to clear ECU codes, or press F1 to clear entered or selected codes that are stored in the tester memory.
4. When F0: FROM ECU is selected, one or more instruction screens explain how to clear the DTCs. The instructions are specific to the vehicle selected. The illustration shows examples of Clear DTC instructions.
5. When F1: FROM TESTER is selected, the DTCs stored in the tester are cleared.
6. Press EXIT to return to the DTC menu.



Examples of Clear DTC Instructions

ACTIVE KEYS	
F0	Display how to clear ECU codes information.
F1	Clear codes stored in tester memory.
ENTER	Return to DTC menu.
EXIT	Return to DTC menu.

5. MODE F3: SNAPSHOT

The purpose of the Snapshot test mode is to help you isolate an intermittent or transient problem by storing engine data parameters before and/or after the problem occurs. The Snapshot test mode can be used in the service bay and during road testing.

When the tester is operating in Snapshot mode, it is constantly storing diagnostic data parameter values and any available trouble codes. A time and position index for the stored information is also saved. When the tester memory is full, the oldest (earliest) data collected is erased to make room for new information.

A “TRIGGER” tells the tester when to freeze collected data. You can specify a “TRIGGER CONDITION” and “TRIGGER POINT” so the tester collects data that will be most useful in diagnosing the current problem.

TRIGGER CONDITION

The trigger condition that you select defines the specific circumstances under which you want the trigger to be set. The various trigger conditions are explained fully in Step 2 of the operating procedures.

TRIGGER POINT

If F9: TRIG. POINT is selected from the Snapshot Options menu, a trigger point selection menu is displayed. Trigger Point allows you to specify which data to capture: data that occurs before, after, or both before and after the point at which the trigger occurs. If no trigger point is selected, the center trigger point will be used and a similar number of data samples before and after the trigger will be saved. Selecting a trigger point is fully explained in Step 2 of the operating procedures.

VIEWING CAPTURED DATA

By selecting F3: REPLAY DATA from the Snapshot menu you have the option of bypassing the Data Capture phase and displaying previously captured data. All data captured during Snapshot will be retained in the tester memory for up to 24 hours (even if the tester is unplugged from the vehicle), or until it is overwritten by a new Snapshot.

PRINTING CAPTURED DATA

In addition, you can print the captured data, providing a hard copy of any selected data sample. See Step 11 for more detail.

OPERATING PROCEDURE

The operation of Snapshot mode is divided into three phases: Set-Up (Steps 1-2), Data Capture (Steps 3-6), and Data Display (Steps 7-12).

Setup Phase

To select the setup phase of Snapshot mode, do the following:

1. Press F3 to select Snapshot mode from the Select Mode menu.

   The Snapshot functions are listed in the Snapshot Options menu. To bypass the Data Capture phase and review previously captured Snapshot data, press F3: REPLAY DATA.

2. To select a Snapshot option, press the key listed to the left of the desired function. The Snapshot functions are explained below:

F0: ANY CODE — A trigger occurs when any trouble code is set. An F9 or EXIT key press also causes a trigger.

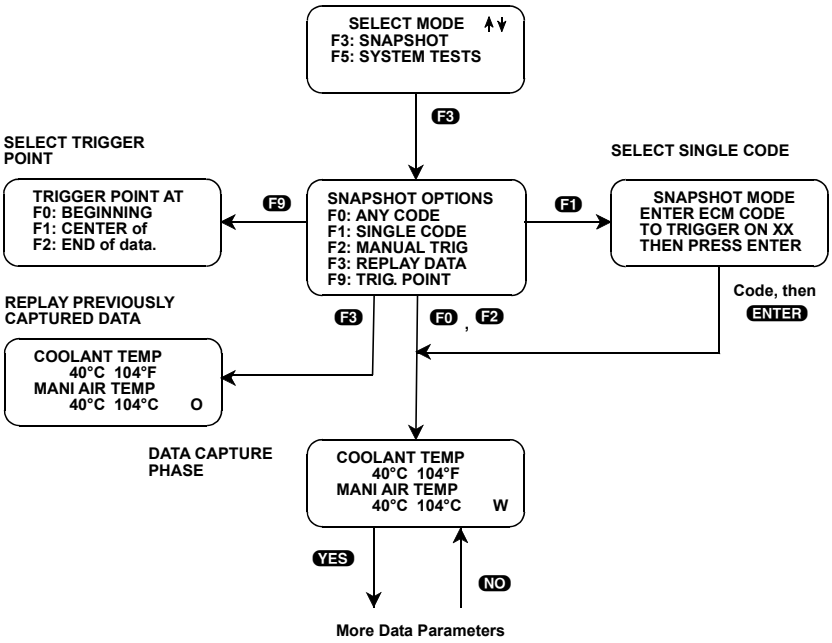
F1: SINGLE CODE — You can select a specific trouble code that must be detected before the trigger will be set. When F1: SINGLE CODE is selected, the tester displays "SNAPSHOT MODE, ENTER TROUBLE CODE XX, (CODE + ENTER)". Use numeric keys 0 - 9 to enter the trouble code number that you wish to cause the trigger, then press ENTER. The tester continues to store data until the specified trouble code is detected. If the code you enter does not exist for the engine type being tested, an "INVALID CODE" message will be displayed and the code will have to be reentered. An F9 or EXIT key press will also cause a trigger.

F2: MANUAL TRIGGER — While operating the Snapshot mode, you can always cause the trigger to be set by pressing ENTER, EXIT or F9.

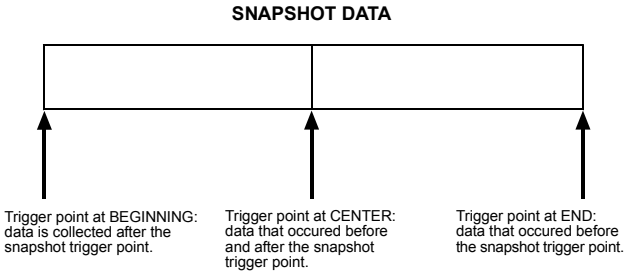
F3: REPLAY DATA — To replay previously captured data, press F3. All data captured during the Snapshot is retained in the tester memory for up to 24 hours, even if the tester is disconnected from the vehicle, or until it is overwritten by a new Snapshot.

F9: TRIGGER POINT — In addition to a trigger condition selection, you have the option of selecting a trigger point.

- **F0: BEGINNING** — The trigger will be at the beginning of the captured data. After the trigger occurs, the tester continues capturing data until the memory is full, then the data is displayed. If not enough data samples have been collected to fill the tester memory (because EXIT was pressed before the tester memory was full), some data samples captured before the trigger point will also be available for display.
- **F1: CENTER** — If enough time has elapsed before and after the trigger point, a similar number of data samples that occurred before and after the trigger point are available for display. However, if the trigger occurs at or near the start of the Data Capture phase, there are fewer samples before the trigger point available for display. Also, if the EXIT key is pressed after the trigger occurs, but before the tester memory is full, fewer data samples captured after the trigger point are available for display.
- **F2: END OF DATA** — Data that occurred before the trigger is displayed. If the tester memory was not full when the trigger occurred, some data samples captured after the trigger point are also available for display.



Snapshot Setup Phase

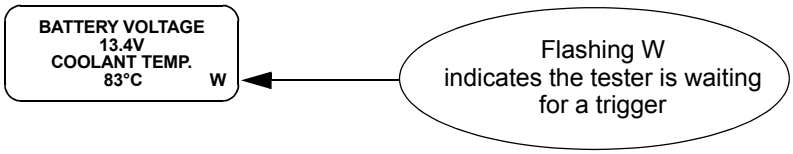

SNAPSHOT DATA
Trigger point at BEGINNING: data is collected after the snapshot trigger point.
Trigger point at CENTER: data that occured before and after the snapshot trigger point.
Trigger point at END: data that occured before the snapshot trigger point.

ACTIVE KEYS	
F0 - F9	Select Snapshot Function.
0 - 9	Enter specific trouble code digits.
F9	Manual trigger.
ENTER	Enter selected trouble code. Cause trigger during data capture.
EXIT	Terminate Snapshot mode and return to Select Mode menu. Cause trigger during data capture and terminate further data capture. Terminate data capture after Snapshot trigger has occurred.

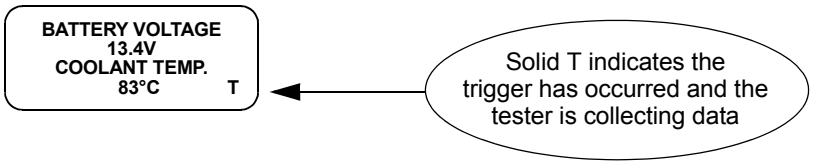
Data Capture Phase

To select the data capture phase of Snapshot mode, do the following:

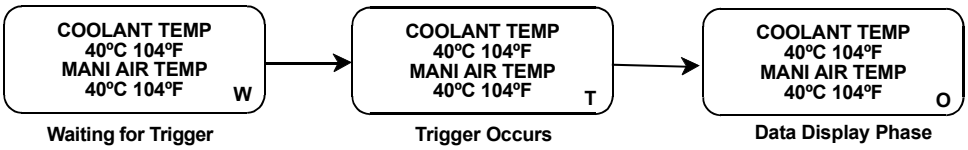
3. Once you've specified the trigger condition, the tester starts saving data in its memory. During this time, you can examine all of the data in the same manner as you do in the F0: Data List mode. You can even create your own pairs during Snapshot. While the tester is waiting for the trigger condition to occur, a flashing “W” is displayed in the lower right-hand corner of the screen.



4. While the tester is waiting for the trigger, it is continuously storing data. The data is organized as a number of 'samples'. The value or state of each parameter as well as all trouble codes are saved for each sample. All data parameters available in F0: Data List mode are stored when saving a snapshot.
5. Once the trigger occurs, the tester continues to save data samples until its memory is full. The tester display indicates that the trigger has occurred by replacing the flashing “W” in the lower right-hand corner of the display with a solid “T”. As soon as the memory is full, the Data Capture phase terminates automatically, and the tester goes on to the Search for Trouble Code phase.



6. Pressing **EXIT** terminates the Data Capture phase early. If the trigger occurred before **EXIT** was pressed, the tester automatically goes to the Data Display phase. If the trigger had not occurred before **EXIT** was pressed, the tester returns to the Snapshot Options menu.

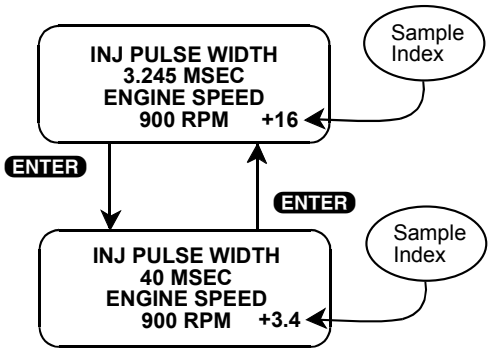


ACTIVE KEYS	
YES **NO**	Scroll through displayed data parameter.
F0	Mark the top display parameter as “fixed” for creating your own pairs.
F1	Mark the bottom display parameter as “fixed” for creating your own pairs.
F9	Manual trigger.
EXIT	Terminate data capture early.
ENTER	Manual trigger.

Data Display Phase

To select the data display phase of Snapshot mode, do the following:

7. The Data Display phase is indicated with the number of the data sample in the lower right-hand corner of the display. Use the ↑ and ↓ keys to sequence through the data samples. Sample "0" corresponds to the trigger sample; sample "-1" is the sample immediately preceding the trigger; sample "+1" is the sample immediately after the trigger; and so on. Press F4 to go to the earliest sample in memory, or F6 to go to the latest sample. Press F5 to display the trigger sample (0).
8. While in the data display phase, pressing ENTER toggles between the sample index and the sample time.



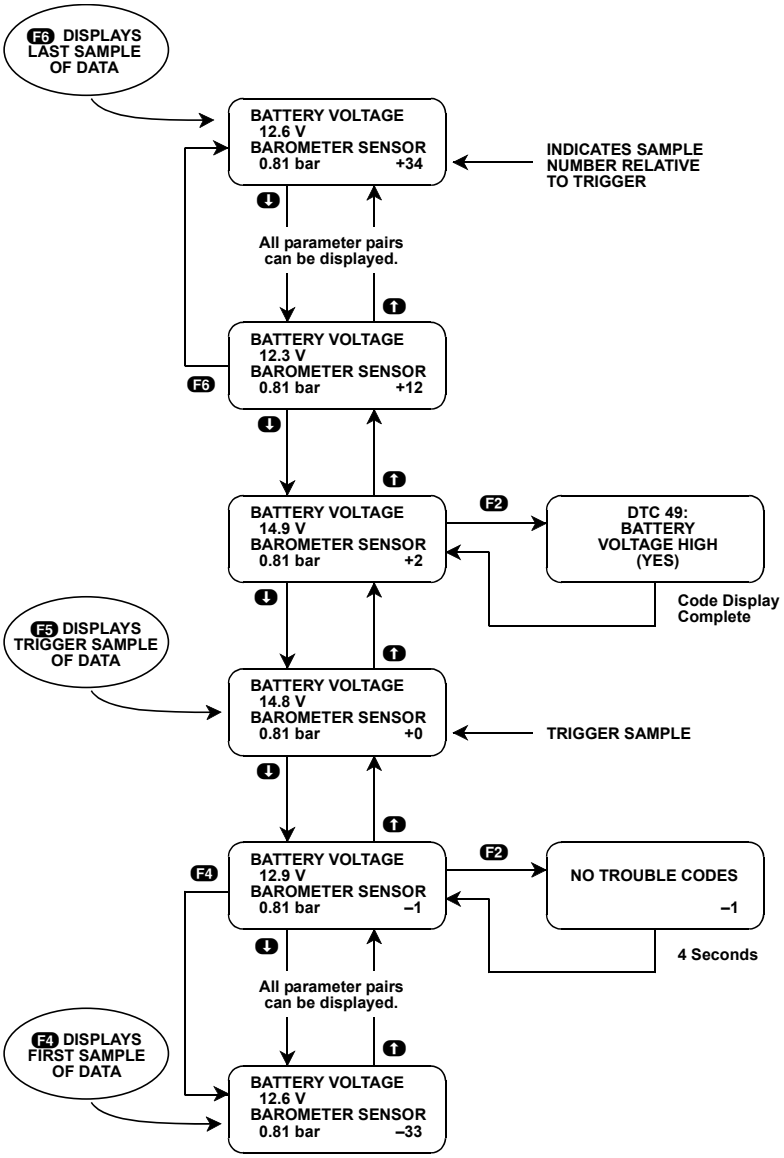
   The sample time and sample index displayed is relative to the trigger; samples **before** the trigger have a **negative** time, samples **after** the trigger have a **positive** time.

9. Select the data parameters to be displayed in the same manner as in the Data List mode. All Data List functions are available, such as the ability to create your own parameter pairs.
10. For most vehicles you can press F2 to view the trouble codes present in any sample.
11. The currently displayed sample may be printed if the tester is connected to a printer. To print the data, press F8. While the tester is sending data to the printer, the keyboard is disabled.

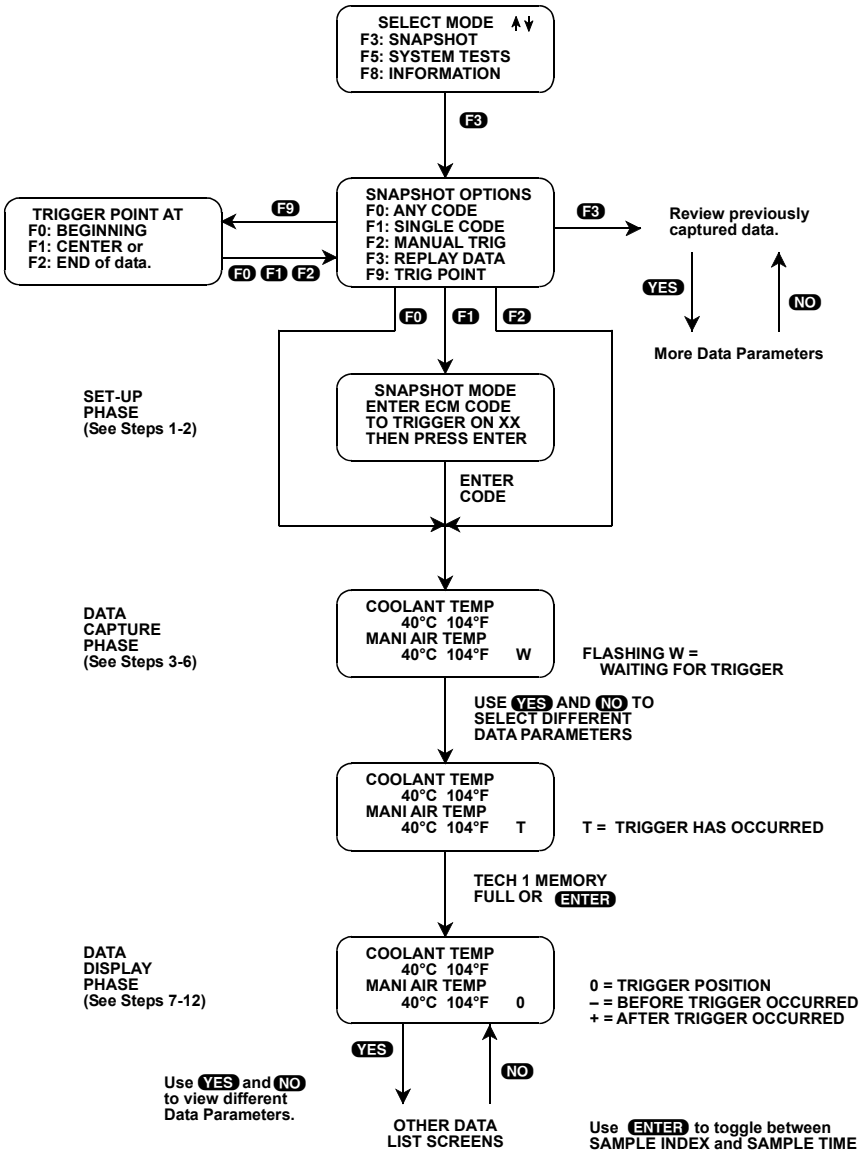
    Snapshot data can also be printed in a tabular format using the SCREEN PRINT feature. Refer to the tester operator's manual for setting up the tester to print.
12. When you are finished viewing the sampled data, press EXIT to return to the Snapshot Options menu. Press EXIT again to return to the Select Mode menu.

ACTIVE KEYS	
YES , NO	Scroll through displayed data parameters.
F0 , F1	Fix the top or bottom display parameter respectively.
F2	Display trouble codes for current sample.
↑	Go to the next data sample.
↓	Go to the previous data sample.
ENTER	Toggle between sample time and index.
F4	Go to the earliest sample in memory.

ACTIVE KEYS (Continued)	
F5	Go to the trigger sample (sample 0).
F6	Go to the latest sample in memory.
F8	Print Data List.
EXIT	Return to Set-Up Phase.


F6 DISPLAYS LAST SAMPLE OF DATA
BATTERY VOLTAGE 12.6 V BAROMETER SENSOR 0.81 bar +34
INDICATES SAMPLE NUMBER RELATIVE TO TRIGGER
All parameter pairs can be displayed.
BATTERY VOLTAGE 12.3 V BAROMETER SENSOR 0.81 bar +12
F6
BATTERY VOLTAGE 14.9 V BAROMETER SENSOR 0.81 bar +2
F2
DTC 49: BATTERY VOLTAGE HIGH (YES)
Code Display Complete
F5 DISPLAYS TRIGGER SAMPLE OF DATA
BATTERY VOLTAGE 14.8 V BAROMETER SENSOR 0.81 bar +0
TRIGGER SAMPLE
BATTERY VOLTAGE 12.9 V BAROMETER SENSOR 0.81 bar –1
F4
F2
NO TROUBLE CODES –1
4 Seconds
All parameter pairs can be displayed.
F4 DISPLAYS FIRST SAMPLE OF DATA
BATTERY VOLTAGE 12.6 V BAROMETER SENSOR 0.81 bar –33

Snapshot Data Display



Snapshot Mode Flowchart

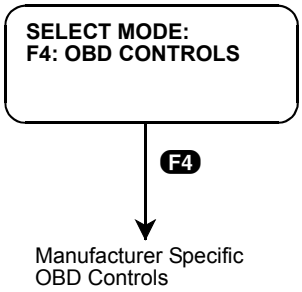
6. MODE F4: OBD CONTROLS

The OBD Controls mode is used to select a submenu of tests available for the selected vehicle.

The tests vary according to vehicle manufacturer. Instructions for selecting and operating the OBD Controls are included in the Manufacturer Specific Instructions.

To select OBD Controls mode, do the following:

1. Press F4 to display a list of tests available for the selected vehicle.



2. Refer to the Manufacturer Specific Instructions for the vehicle you are testing for operating instructions.
3. Press EXIT to return to the Select Mode menu.

7. MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

The System Tests submode ensures that the vehicle system is properly warmed and preconditioned in order to ensure accurate diagnosis. The Prepare Vehicle system test is available for all vehicles.

The Prepare Vehicle System Test submode ensures that the vehicle system is properly warmed and preconditioned for accurate diagnosis. The Prepare Vehicle test also guides you through vehicle no-start diagnostics (the tester prompts you if the vehicle can start, if the engine can crank, or if spark is observed at the spark plug) which can help you in reviving a no-start vehicle, so diagnosis can be performed on a vehicle with possible engine control system problems. Performing the Prepare Vehicle System test should be done every time that you are performing diagnosis on the engine control system.

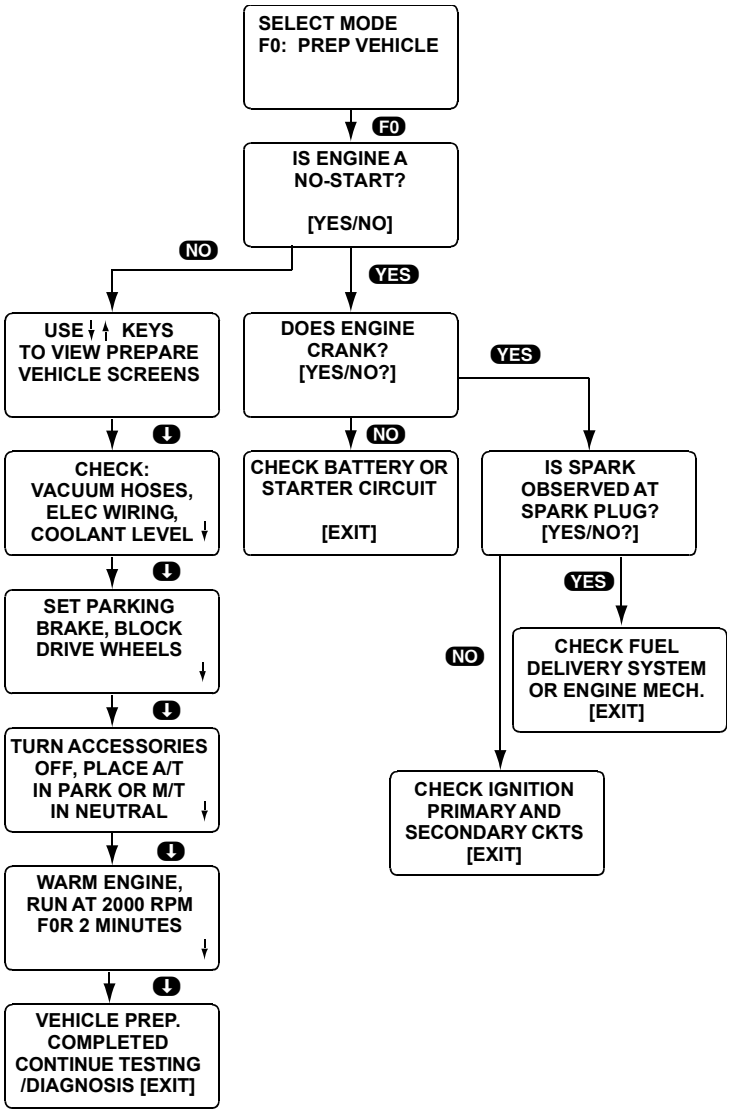
Before performing the Prep Vehicle submode, select the type of vehicle being tested.

NOTE	
	When checking an engine for spark at the ignition coil, coil secondary wire, or spark plug secondary wire, use a suitable spark gap tester to prevent electrical shock and ignition system damage. Run the test in a well-ventilated area.

To select Prep Vehicle submode, do the following:

1. Press F0 to select Prep Vehicle from the System Tests menu.
2. Start the engine, if possible, then use the up and down keys to read the prepare vehicle screens. When the instructions on the screens have been completed, press EXIT to return to the Select Mode menu.
3. If the engine will not start, follow the Engine No-Start instructions, then press EXIT to return to the Select System Tests menu.

ACTIVE KEYS	
↑ , ↓	Used to scroll through the instruction displays.
YES , NO	Answer question on screen.
EXIT	Return to Select Mode menu.


SELECT MODE
F0: PREP VEHICLE
F0
IS ENGINE A NO-START?
[YES/NO]
NO
YES
USE ↓ ↑ KEYS TO VIEW PREPARE VEHICLE SCREENS
DOES ENGINE CRANK? [YES/NO?]
YES
CHECK: VACUUM HOSES, ELEC WIRING, COOLANT LEVEL ↓
NO
CHECK BATTERY OR STARTER CIRCUIT
[EXIT]
IS SPARK OBSERVED AT SPARK PLUG? [YES/NO?]
SET PARKING BRAKE, BLOCK DRIVE WHEELS ↓
YES
NO
CHECK FUEL DELIVERY SYSTEM OR ENGINE MECH. [EXIT]
TURN ACCESSORIES OFF, PLACE A/T IN PARK OR M/T IN NEUTRAL ↓
CHECK IGNITION PRIMARY AND SECONDARY CKTS [EXIT]
WARM ENGINE, RUN AT 2000 RPM F0R 2 MINUTES ↓
VEHICLE PREP. COMPLETED CONTINUE TESTING /DIAGNOSIS [EXIT]

Prep Vehicle Flowchart

8. MODE F8: INFORMATION

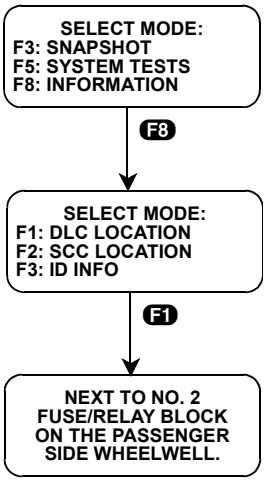
SUBMODE F1: DLC LOCATION

Submode F1: DLC Location is available for select Chrysler Import and Nissan vehicles, and all Hyundai, Lexus, Mazda, Mitsubishi, and Toyota vehicles.

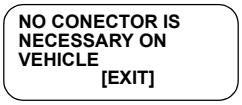
The DLC Location test mode displays where the Data Link Connector (DLC) for the selected ECU is located on the vehicle. Depending on the vehicle being tested, there may be one or more different DLCs for the various ECUs. The tester informs you if the DLC location is not applicable for the selected system.

To select DLC Location submode, do the following:

1. Press F8 to select Information from the Select Mode menu.
2. Press F1 to select DLC Location from the Information menu.
3. The tester displays the location(s) of the DLC(s) and/or Check Connectors for the selected vehicle. For some Toyota and Lexus vehicles, you can select the DLC location of the TDCL or Check connector. Some examples of DLC Location displays are shown in the following figure. Remember, the displays for other vehicles will be different.



4. If no DLC or Check Connector link is necessary, the tester displays one of the following screens.



5. Press EXIT to return to the Information menu.

ACTIVE KEYS	
EXIT	Return to Information menu.

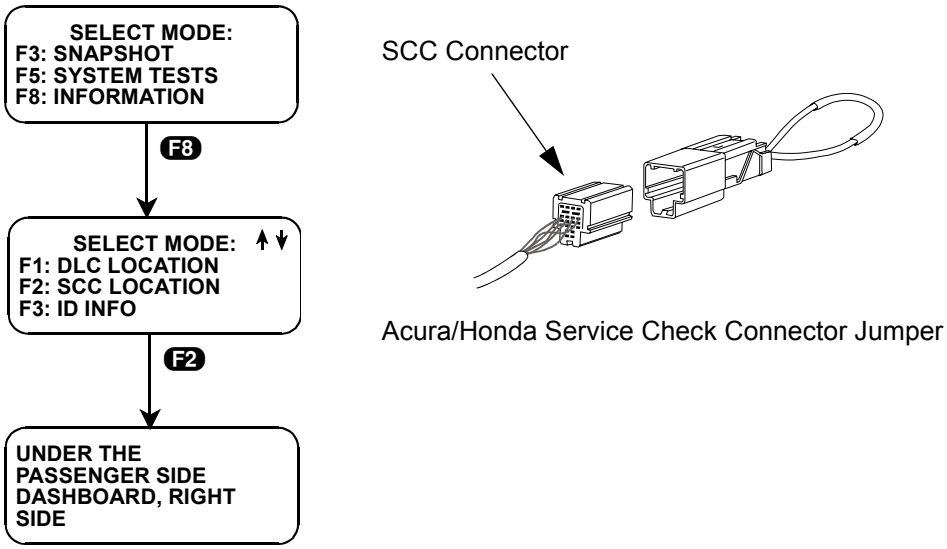
SUBMODE F2: SCC LOCATION

Submode F2: SCC Location is available for Acura and Honda vehicles only.

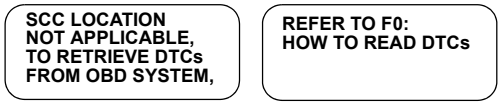
The SCC Location test mode displays where the Service Check Connector (SCC) for the selected ECU is located on the vehicle. Depending on the vehicle being tested, there may be one or more different SCCs for the various ECUs. The tester informs you if the SCC location is not applicable for the selected system.

To select SCC Location submode, do the following:

1. Press **F8** to select Information from the Select Mode menu.
2. Press **F2** to select SCC Location from the Information menu.
3. The tester displays the SCC Location of the ECU being tested on the selected vehicle. Some examples of SCC Location displays are shown in the following figure. Remember, the displays for other vehicles will be different.



4. The tester informs you if the SCC location is not required for the selected vehicle.



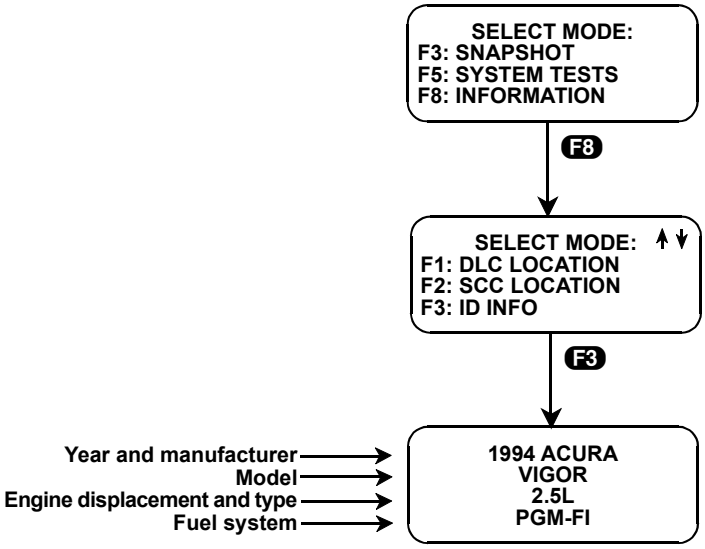
ACTIVE KEYS	
EXIT	Return to Information menu.

SUBMODE F3: ID INFO

The Vehicle Information submode displays the currently selected year, vehicle manufacturer, model, engine displacement and type, and additional information such as fuel system and grade.

To select ID Info submode, do the following:

1. Press F8 to select Information from the Select Mode menu.
2. Press F3 to select ID Info from the Information menu.
3. The currently selected vehicle information is displayed. An example is shown in the following figure.



4. If the information does not match the vehicle being tested, press EXIT until the Asian Cartridge Power-up screen is displayed, then perform the vehicle selection procedure.
5. If the information matches the vehicle being tested, press EXIT to return to the Information menu.

ACTIVE KEYS	
EXIT	Return to Information menu. Press repeatedly to return to Power-up display.

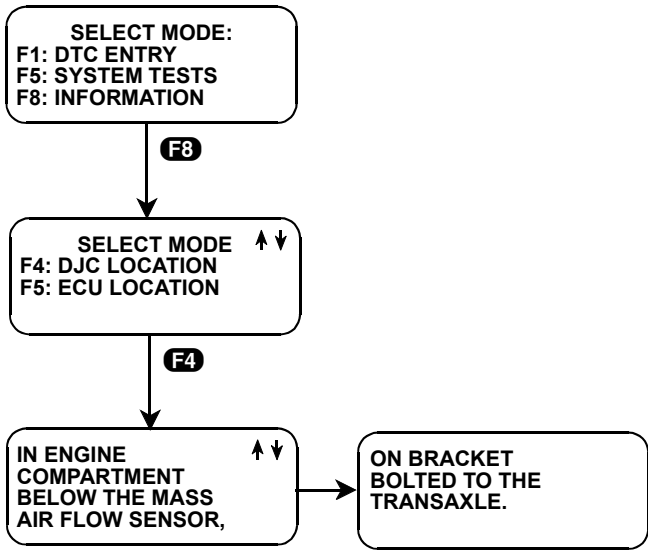
SUBMODE F4: DJC LOCATION

Submode F4: DJC Location is available for select Chrysler Import and Nissan vehicles, and all Daihatsu, Hyundai, Kia, Mitsubishi, and Subaru vehicles.

The DJC Location test mode displays where the Diagnostic Jumper Connector (DJC) for the selected ECU is located on the vehicle. Depending on the vehicle being tested, there may be one or more different DJCs for the various ECUs. The tester informs you if the DJC location is not applicable for the selected system.

To select DJC Location submode, do the following:

1. Press F8 to select Information from the Select Mode menu.
2. Press F4 to select DJC Location from the Information menu.
3. The tester displays the DJC Location of the ECU for the selected vehicle or system. Some examples of DJC Location displays are shown in the following figure. Remember, the displays for other vehicles will be different.



4. Press EXIT to return to the Information menu.

ACTIVE KEYS	
EXIT	Return to Information menu.

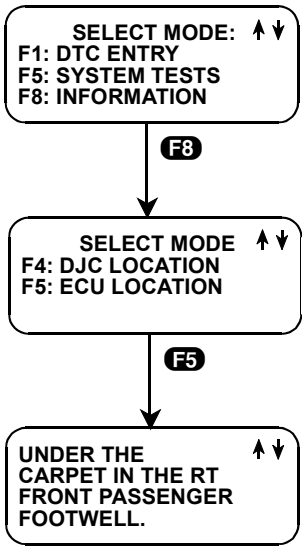
SUBMODE F5: ECU LOCATION

Submode F5: ECU Location is available for select Nissan vehicles, and all Acura, Honda, Infiniti, Kia and Subaru vehicles.

The ECU Location test mode displays where the selected Electronic Control Unit (ECU) is located on the vehicle. Depending on the vehicle being tested, there may be one or more different ECUs. The tester informs you if the ECU location is not applicable for the selected system.

To select ECU Location submode, do the following:

1. Press F8 to select Information from the Select Mode menu.
2. Press F5 to select ECU Location from the Information menu.
3. The tester displays the location of the selected ECU on the selected vehicle. Some examples of ECU Location displays are shown in the following figure. Remember, the displays for other vehicles will be different.



ACTIVE KEYS	
EXIT	Return to Information menu.

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1. TEST MODES AVAILABLE

The OBD II Section defines available test modes, hardware requirements, and operating instructions for all OBD II compliant vehicles. All OBD II functions except OBD II Toolpak require communication with the vehicle ECU(s). Once the necessary hardware has been installed, communication between the tester and vehicle ECU(s) can be initialized.The following test modes are available when testing Asian Imports vehicles that are OBD II compliant.

F0: DATALIST

F0: Display Data
F1: Data Setup

F1: READINESS

F2: DTCS

F0: Read DTCs
F1: Freeze Data
F2: Clear Info
F3: Pending DTCs

F3: SNAPSHOT

F4: OBD CONTROLS

F5: SYSTEM TESTS

F0: O2S Results
F1: Other Results

F8: INFORMATIONS

F9: OBD II TOOLPAK

NOTE

Not all models support OBD Controls or Information test modes. The tester will automatically determine whether the vehicle under test supports the test mode when the mode is selected.

2. HARDWARE REQUIRED

In order to be fully functional, the Asian imports Application cartridge requires that special OBD II Interface Circuitry be used with the Mastertech and Tech 1/1A testers. This circuitry can be installed in the following configurations: Mastertech, Tech 1A, and Tech 1.

MASTERTECH

To set up the Mastertech tester to test OBD II compliant vehicles, do the following:

1. Make sure the tester is OFF. Insert the Asian Imports application cartridge into the cartridge slot at the top of the OBD II compliant Mastertech.
2. Be sure the vehicle ignition switch is off.
3. Remove any adapters installed on the Data Link Connector (DLC) cable.
4. Connect the DLC cable to the tester and tighten the screws.
5. Connect the 16/14 Pin OBD II Adapter Cable to the DLC cable.
6. Connect the OBD II Adapter Cable to the vehicle DLC.
7. Turn the tester ON. Power and ground are provided through the DLC connector, so connecting the 12V power cable to the vehicle is not required.
8. Turn the vehicle ignition switch on to begin diagnostics.
9. Refer to this manual and the application cartridge operator's manual for software operating instructions.

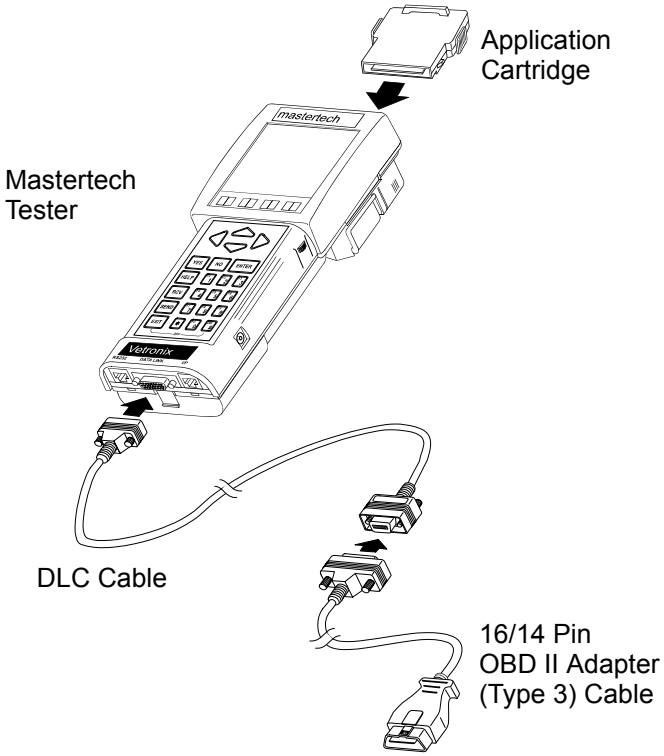


FIGURE 1-1. Mastertech Setup

TECH 1A

To setup the Tech 1A tester to test OBD II compliant vehicles, do the following:

1. Insert the OBD II Interface Cartridge into the Auxiliary cartridge slot at the top, rear of the tester.
2. Insert the Asian Imports application cartridge into the Master cartridge slot at the bottom, rear of the tester.
3. Be sure the vehicle ignition switch is off.
4. Remove any adapters installed on the Data Link Connector (DLC) cable.
5. Connect the DLC cable to the tester and tighten the screws.
6. Connect the 16/14 Pin OBD II Adapter Cable to the DLC cable.
7. Connect the OBD II Adapter Cable to the vehicle DLC.
8. Power and ground are provided through the DLC connector, so connecting the 12V power cable to the vehicle is not required.
9. Turn the vehicle ignition switch on to begin diagnostics.
10. Refer to this manual and the application cartridge operator's manual for software operating instructions

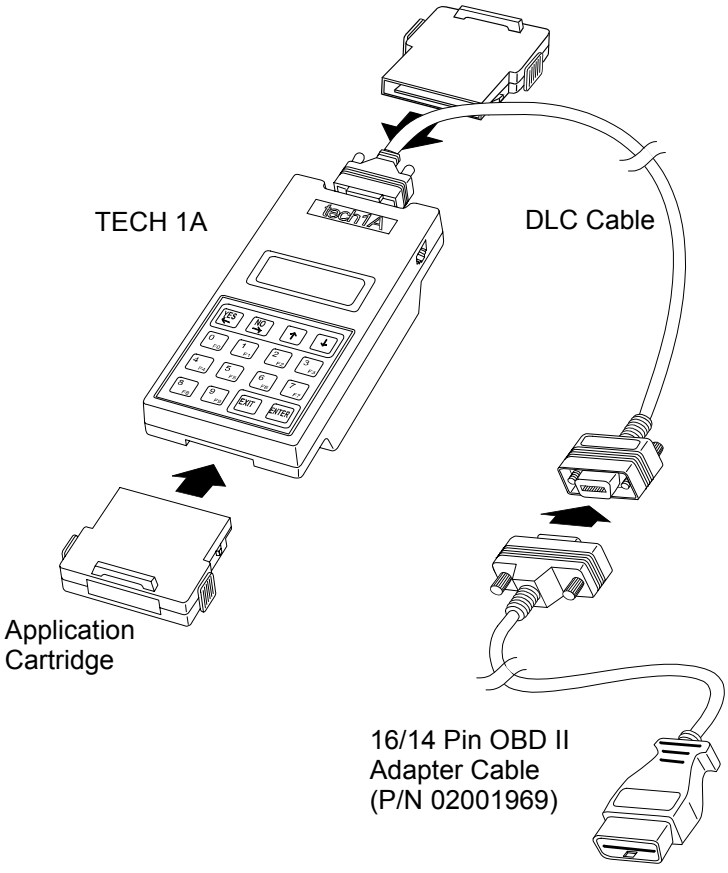


FIGURE 1-2. Tech 1A Setup

TECH 1

To set up the Tech 1 tester to test OBD II compliant vehicles, do the following:

1. 1. Insert the Asian Imports application cartridge into the Master cartridge slot at the bottom, rear of the tester.
2. Be sure the vehicle ignition switch is off.
3. Remove any adapters installed on the Data Link Connector (DLC) cable.
4. Connect the DLC cable to the tester and tighten the screws.
5. Connect the Tech 1 14/12 Pin VIM Adapter to the DLC cable.
6. Connect the Tech 1 OBD II Vehicle Interface Module (VIM) to the Tech 1 14/12 Pin VIM Adapter.
7. Connect the 16/24 Pin OBD II Adapter Cable to the VIM.
8. Connect the OBD II Adapter Cable to the vehicle DLC.
9. Connect the 12V power cable to the vehicle cigarette lighter.
10. Turn the vehicle ignition switch ON to begin diagnostics.
11. Refer to this manual and the application cartridge operator's manual for software operating instructions.

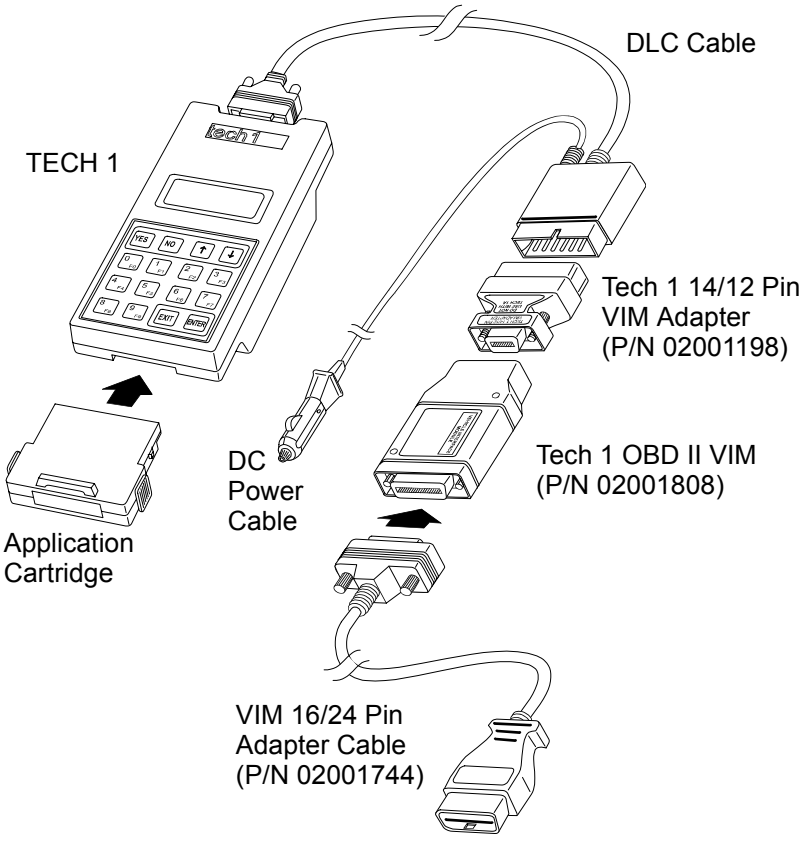


FIGURE 1-3. Tech 1 Setup

PRINTING CAPABILITIES

The Asian Imports software supports printing data via a Tech 1 printer, VP-414 printer, or other compatible serial printer, connected to the tester. If you are using a Tech 1 tester, refer to the RS232 Operator's Manual for setup and printing instructions. If you are using a Tech 1A or Mastertech tester, refer to the tester Operator's Manual for setup and printing instructions.

Two types of printing are supported by the OBD II software:

- Pressing the F8 key in a Data Display mode (e.g., Data List or DTCs) causes the tester to print a list of data appropriate to the mode (a list of diagnostic data parameters or DTCs).
- The tester can be setup to print an image of the tester's screen (referred to as Screen Print).

For information on the VP-414 serial printer, contact your sales representative.

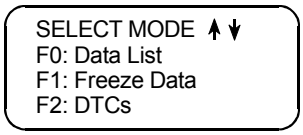
3. GETTING STARTED

POWERING THE MASTERTECH, TECH 1A, OR TECH 1

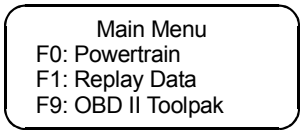
The tester must be provided with an external power source (e.g., vehicle power or an AC/DC power supply). OBD II compliant vehicles provide power at the Data Link Connector (DLC), so when using a Mastertech or Tech 1A, the tester only needs to be connected to the vehicle DLC. With the Tech 1, you must connect the DC Power Cable to the vehicle cigarette lighter or to an AC/DC power supply.

ESTABLISHING COMMUNICATION

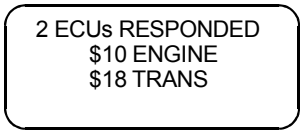
By selecting the vehicle for testing, you are now at the main menu. You can initialize communication between the tester and the vehicle's ECU(s) by selecting F0: Powertrain. The SELECT MODE menu will be displayed.



If a snapshot has been saved in the tester's memory, a menu will be displayed to allow the selection of F1: REPLAY DATA before initialization begins. Replay of snapshot data does not require communication with the vehicle and can be displayed with power to the tester.



If the vehicle you are testing contains more than one OBD II ECU, the tester will display a list of all ECUs which have responded during the initialization process. See *Multiple ECUs* on page 11.



COMMUNICATION FAILURE

If the tester fails to get a response from the vehicle, it will display a retry count and one of two error messages. At that point, it will continue to retry communication approximately every 3 seconds. If the communication problem is resolved (e.g., the ignition is switched to ON) and communication begins, the tester will automatically proceed to the next phase. If communication cannot be established, see Appendix D.

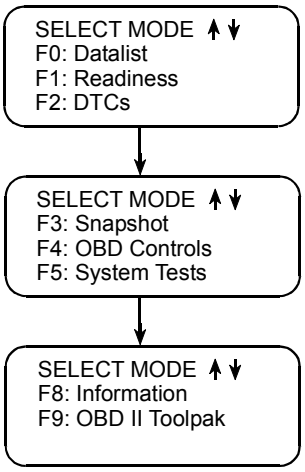
4. TEST MODES

Once communication with the vehicle has been established, a select mode menu is displayed. (In some cases, a readiness tests warning message is displayed prior to the menu. See *Mode F1: Readiness* on page 14.)

SELECT MODE MENU

The Select Mode menu allows you to perform basic testing on the vehicle. You can select the desired function by pressing the key indicated to the left of the function. The menu automatically scrolls every 3 seconds until you press ↑ or ↓, at which time scrolling stops.

Pressing ↑ or ↓ will then cause the menu to manually scroll.



If the vehicle you are testing contains more than one ECU, the tester will display a list of all ECUs which have responded during the initialization process. See *Multiple ECUs* on page 11.

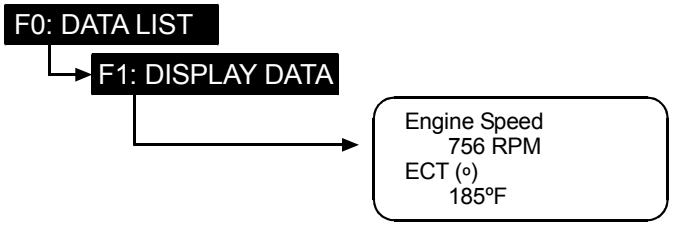
MODE F0: DATA LIST

The DATA LIST mode allows you to view the current state of diagnostic data parameters as reported by the vehicle's ECUs.

When you select Data List from the OBD II Functions menu, the tester will display the DATA LIST menu. This menu allows you to either go directly to displaying data or to the Data List Setup mode to select the data you want to display.

Submode F0: Display Data

To select Display Data, do the following:

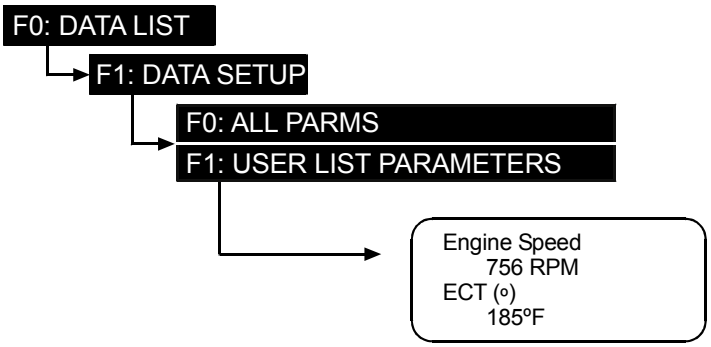


1. Select F0: DATA LIST from the SELECT MODE menu.
2. Select F0: DISPLAY DATA from the DATA LIST menu. The tester will display either ALL PARAMETERS or USER DATA LIST PARAMETERS, depending on which selection was last made since the tester was powered up.

Submode F1: Data Setup

The DATA SETUP mode allows you to select the data you want to display. You can select either ALL PARAMETERS or USER LIST PARAMETERS which allows you to monitor any combination of parameters (from 1 parameter to all parameters). The update rate for the parameters depends on the number of parameters selected. A single parameter can be sampled as fast as 8 times per second. The more parameters that are selected, the slower the update rate will be.

To select Data Setup, do the following:



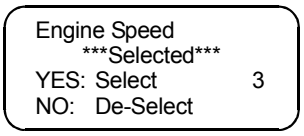
1. Select F0: DATA LIST from the SELECT MODE menu.
2. Select F1: DATA SETUP from the DATA LIST menu.
3. Select F0: ALL PARMS. or F1: USER LIST PARAMETERS from the DATA LIST SETUP menu. The message “WAITING FOR DATA” will be displayed. The tester will display either ALL PARAMETERS or CUSTOM LIST PARAMETERS depending on which selection was made.

Submode F0: All Parameters

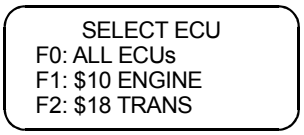
The selection of F0: ALL PARMS will monitor all of the information available from the ECU. Depending on the number of diagnostic data parameters in the data list, the update rate can be 3 seconds or longer.

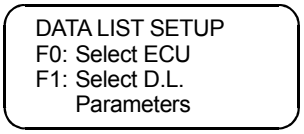
Submode F1: User List Parameters

The selection of F1: USER LIST PARAMETERS will display a list of parameters from which to select. F1:USER LIST PARAMETERS allows you to select any combination to monitor (from 1 parameter to all parameters). Parameters are selected by scrolling through the list using the ↑ and ↓ keys and then pressing YES and NO to select and deselect the listed parameter. When the parameters have been selected, press ENTER to go to the display mode. The tester will remember the selected parameters (until the tester is turned OFF) so you won't have to re-select them every time.



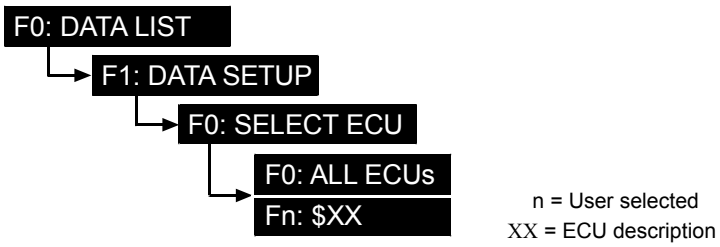
If there are multiple OBD II ECUs, and the DATA SETUP mode is selected, an additional DATA LIST SETUP menu is available. The F0: Select ECU menu allows you to select which ECU(s) will contribute to the data list. Once the ECU(s) that will contribute data are selected, press F1: DATA SETUP to choose all parameters available or a custom list of parameters from the chosen ECU(s).





Multiple ECUs

Diagnostic parameter data can be selected from all ECUs or individual ECUs that the tester has identified. This mode should be set up before display data is selected to ensure your desired ECU data is being displayed.



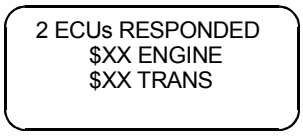
To select multiple ECUs (vehicles with multiple ECUs only), do the following:

1. Select F0: DATA LIST from the SELECT MODE menu.
2. Select F1: DATA SETUP from the DATA LIST menu.
3. Select F0: SELECT ECU from the DATA LIST SETUP menu.

4. Select F0: ALL ECUs or Fn:XX (where n = user selected and XX = a description of the ECU from which you desire information).
5. After selecting the desired ECU, you are returned to the DATA LIST SETUP menu, where the displayed diagnostic data parameters can be selected, or you can exit the menu to the DATA LIST menu, where the selected data list will be displayed.

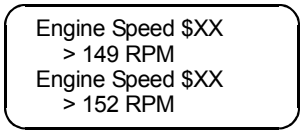
Multiple ECU Display

In some vehicles, diagnostic information can be sent to the tester by more than one OBD II ECU. For example, both an engine and a transmission controller may report engine speed and throttle position to the tester. The Asian Imports software provides support for multiple OBD II ECUs. If there are multiple OBD II ECUs, the software will inform you when establishing communication with the vehicle by displaying the following message:



Multiple ECU Status Information

When viewing multiple OBD II ECU diagnostic data parameters, the symbol = (equal) or > (not equal) before the parameter name indicates the parameter is being updated by multiple ECUs. The = symbol indicates the displayed parameter value is being reported as the same value by multiple ECUs. The > symbol indicates the displayed parameter value is not being reported as the same value by multiple ECUs. If there is no symbol before the parameter name, the parameter is being updated by a single ECU.



CHARACTER	STATUS
=	Indicates multiple controllers are reporting approximately the same value for the parameter.
>	Indicates multiple controllers are reporting different data values and the data values are exceeding the tolerance values for the parameter.
“blank”	Not a multiple ECU response.

The following table lists the tolerances for the different parameters being labelled = or >. Multiple parameters that are within the tolerances are reported as being the same. Multiple parameters that are not within the tolerances are reported as being not the same

PARAMETER	TOLERANCE
Engine Load	1.96%
ECT	5 °C
ST FT 1/ ST FT 2	3.91%

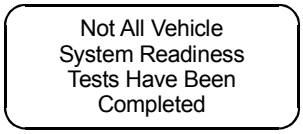
PARAMETER	TOLERANCE
LT FT 1/ LT FT 2	3.91%
Fuel Pressure	15 kPaG
MAP	5 kPa
Engine Spd	2.5 RPM
Vehicle Spd	5 kph
Ign. Timing	2.5 °
IAT	5 °C
MAF	0.1 gm/s
TPS	1.96%
O2S Bx Sx	0.025 V
FT O2S Bx Sx	3.91%

ACTIVE KEYS	
YES / NO	Scroll through displayed data parameters, or for CUSTOM LIST SETUP, SELECT, or DESELECT PARAMETERS.
↑ / ↓	Scroll through parameters in CUSTOM LIST.
F0	Mark top displayed parameter as fixed for creating your own data pairs; unlock bottom parameter if fixed.
F1	Mark bottom displayed parameter as fixed for creating your own data pairs; unlock top parameter if fixed.
F3	Toggle the data descriptor line with the Parameter Identification (PID) number and the ECU number.
F7	Toggle unit conversions for applicable parameters, between English and metric.
F8	Print data list (if equipped with serial printer).
EXIT	Return to DATA LIST menu.

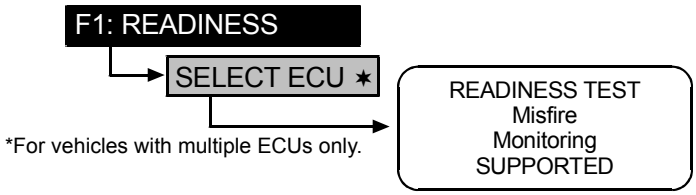
MODE F1: READINESS

The READINESS test mode allows you to display the status of the vehicle's on-board monitors, which monitor the operation of the emissions-related components. These READINESS tests must run in order for the DTC and test result displays to accurately reflect the conditions of the vehicle's emissions-related components.

If the vehicle you are testing contains more than one OBD II ECU, you will be asked to select which ECU information you would like displayed.



If the tester determines that the ECU has not completed all of the readiness tests, it will display a warning message. You can then select the READINESS tests menu item from the SELECT MODE menu to examine the status of these tests. For information on how to complete any of the readiness tests, refer to service information from the vehicle manufacturer.



To display the status of the vehicle's on-board monitors, do the following:

1. Select F1: READINESS from the SELECT MODE menu.
2. Select the ECU from which you choose to monitor data (for vehicles with multiple ECUs only). The message “WAITING FOR DATA” is displayed, followed by the READINESS TEST information.
3. The first three items on the display indicate the vehicle's monitoring capability for continuously monitored systems:
   - Misfire monitoring.
   - Fuel system monitoring.
   - Comprehensive component monitoring.

   These are indicated as either being supported or NOT SUPPORTED (N/A), depending on the vehicle's ECU.

   The other 8 display items indicate the status of the tests which are performed at least “once per trip”.
   - Catalyst monitoring.
   - Heated catalyst monitoring.
   - Evaporative system monitoring.
   - Secondary air system monitoring.
   - A/C system refrigerant monitoring.

- Oxygen sensor monitoring.
- Oxygen sensor heater monitoring.
- EGR system monitoring.

These tests can be Completed, Not Completed, or Not Supported.

Readiness Test Operation

OBD II System and Vehicle Information

The OBD II system is capable of identifying the likely area of a malfunction within the electronic engine control system. Observe the following before beginning diagnostic service:

- MIL OPERATION. When excessive tailpipe emissions or powertrain component failure are detected by the OBD II system, the Malfunction Indicator Lamp (MIL) will illuminate.
- LOW FUEL TANK LEVEL. Automobile manufacturers may disable READINESS tests which can be affected by running the vehicle out of fuel (e.g., a monitor may become disabled when fuel tank volume is below 15% of maximum fuel tank capacity).
- ALTITUDE. Automobile manufacturers may disable READINESS tests which can be affected by altitude (e.g., a READINESS test may become disabled when vehicle is operated above 8,000 feet elevation).
- AMBIENT TEMPERATURE. Automobile manufacturers may disable READINESS tests which can be affected by ambient temperature (e.g., a READINESS test may become disabled when a vehicle is started below 20°F ambient).
- POWER TAKE-OFF UNIT. Automobile manufacturers may disable READINESS tests which can be affected by power take-off unit operation (e.g., a READINESS test may become disabled when a vehicle power take-off is engaged or active).

All of the above are part of the California Air Resources Board OBD II regulation and are options available to the automobile manufacturer for vehicle Powertrain Control Module (PCM) development. In the case of some READINESS tests, per the above, a manufacturer may have determined that a READINESS test is unreliable or not complete when certain conditions exist, therefore not enabling proper operation.

ACTIVE KEYS	
↑	Move marker.
↓	Freeze menu scroll.
F8	Print readiness test results.
EXIT	Return to SELECT MODE menu.

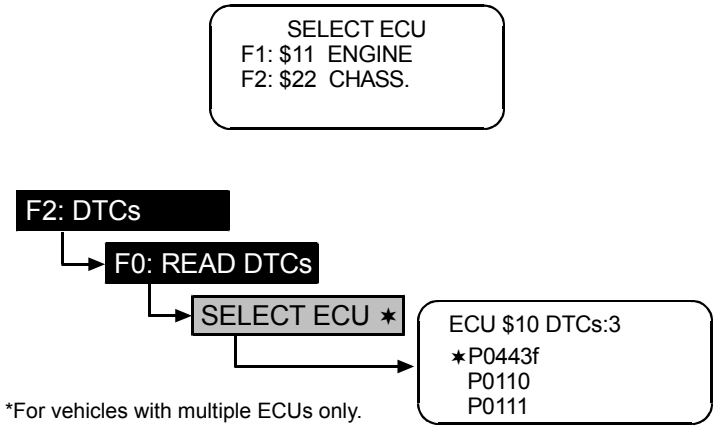
MODE F2: DIAGNOSTIC TROUBLE CODES (DTCS)

Submode F0: Read DTCs

When you select the F0: READ DTCs mode, the tester reads all DTCs which have been stored by the vehicle's controllers and then displays:

- a two-column list of all DTCs.
- the ID of the ECU reporting the DTCs.
- how many codes have been reported by that ECU.

If the vehicle you are testing contains more than one OBD II ECU, you will be asked to select which ECU information you would like displayed.



To read DTCs, do the following:

1. Select F2: DTCs from the SELECT MODE menu.
2. Select F0: READ DTCs for the DTC menu.
3. Select desired ECU from the SELECT ECU menu (for vehicles with multiple ECUs only). The DTC information will then be displayed.

Generally, 6 DTCs can be displayed at one time. If more than 6 DTCs are reported by the ECU, the tester will display a ↓ prompt in the lower right-hand corner indicating that more DTCs are present but are not displayed. Use the ↑, ↓, ←, and → keys to move through the list of DTCs.

A DTC description can be displayed by moving the * next to the desired DTC and pressing ENTER. The ↑ and ↓ keys will scroll through the DTC descriptions.

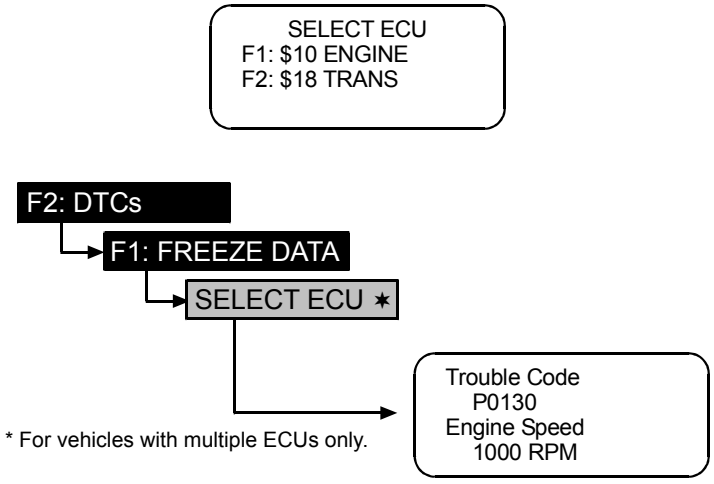
A DTC will display an **f** after the DTC number to signify that there is freeze data available for that DTC. You can go directly to the FREEZE DATA display by pressing F2. This performs exactly the same function as selecting FREEZE DATA from the SELECT MODE menu, but saves you a few key presses.

ACTIVE KEYS	
ENTER	Display the description for the selected DTC.
F2	Go directly to FREEZE DATA.
F8	Print freeze data list (if equipped with serial printer).
↑ / ↓ ← / →	Move through list of DTCs.
EXIT	Return to previous menu.

Submode F1: Freeze Data

The vehicle's ECU stores diagnostic data information about the state of the vehicle when a Diagnostic Trouble Code (DTC) occurs. This data is referred to as Freeze Frame Data and can be read by the tester using the FREEZE DATA mode. You can select this mode from the SELECT MODE menu.

If multiple ECUs are available, the SELECT ECU menu is displayed once FREEZE DATA is selected from the SELECT MODE menu. Only one ECU's data can be displayed in Freeze Data mode.



To display Freeze Data, do the following:

1. Select F2: DTCs from the SELECT MODE menu
2. Select F1: FREEZE DATA from the menu.
3. Select the ECU from which you choose to monitor data (for vehicles with multiple ECUs only). The message "WAITING FOR DATA" will appear. The FREEZE DATA information will then be displayed.

FREEZE DATA is only available for the first DTC which was detected by the vehicle. The first parameter in the list is the DTC which caused the FREEZE DATA to be saved. The FREEZE DATA is displayed in the same format as the data list in the DATA LIST mode.

ACTIVE KEYS	
YES / NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as fixed for creating your own data pairs; unlock bottom parameters if fixed.
F1	Mark bottom displayed parameter as fixed for creating your own data pairs; unlock top parameters if fixed.
F3	Toggle the data descriptor line with the Parameter Identification (PID) number and the ECU number.
F7	Toggle unit conversions for applicable parameters between English and metric.
F8	Print freeze data list (if equipped with a serial printer).
EXIT	Return to SELECT MODE menu.

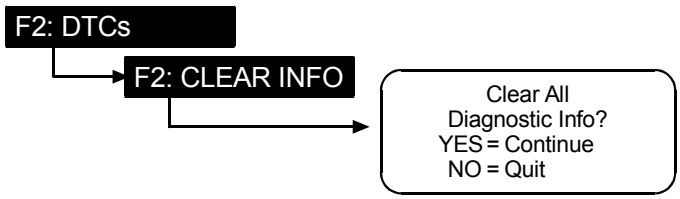
Submode F2: Clear Info

The Clear Information mode is used to clear DTCs from all vehicle ECUs along with any other diagnostic information which the controller has saved, such as Freeze Data.

NOTE

Clearing diagnostic information also clears the status of readiness tests (making them incomplete). It can take 30 to 60 minutes of vehicle drive and engine run time (and in some cases longer) to complete all of these tests if they are cleared. Some inspection and maintenance programs require that the readiness tests be complete before the inspection can proceed.

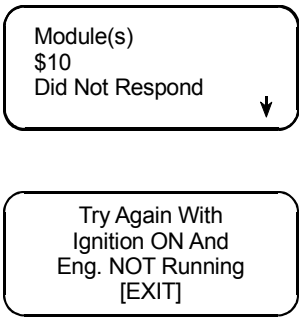
When you select F2: CLEAR INFO, you are first prompted with a warning message. This is to prevent inadvertent clearing of codes. If you press NO or EXIT in response to the prompt, the tester will return to the DTC menu. If you press YES in response to the prompt, the tester will cause all OBD II controllers to clear all emissions-related DTCs, FREEZE DATA, and READINESS TEST results. When the function is complete, the tester will display the screen ALL DIAGNOSTIC INFORMATION CLEARED.



To clear DTCs, do the following:

1. Select F2: DTCs from the SELECT MODE menu.
2. Select F2: CLEAR INFO from the DTCs menu.
3. Press YES to clear DTCs. A warning message will appear to prevent accidental clearing of codes. A screen will then appear to confirm deletion of diagnostic information stored in the vehicle controllers.

Some vehicles will not allow DTCs to be cleared while the engine is running. In this case, the tester will display a prompt screen to turn off the engine, leaving the key in the ON position. For some vehicles, communication may be lost when the key is turned off and then back on. If a Communication Error screen is displayed, exit back to the MAIN menu and re-select Powertrain. You should now be able to clear the diagnostic information.



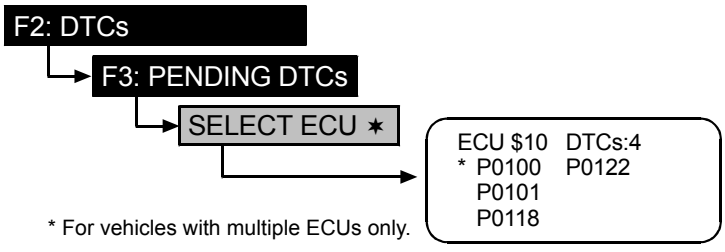
ACTIVE KEYS	
YES	Clears all emissions-related information.
NO / EXIT	Return to SELECT MODE menu.

Submode F3: Pending DTCs

For PENDING DTCs mode, the vehicle's controller performs analysis similar to that used to determine if the equivalent DTC is present, but with less stringent requirements. For example, a DTC may require a condition to be present for several drive cycles, while the equivalent pending DTCs may be set with the first occurrence of the condition.

Results of the pending DTCs request are displayed in a manner similar to the DTC display mode. They are displayed with the same Pxxxx DTC designations and the same descriptors as the DTCs.

If the vehicle you are testing contains more than one OBD II ECU, you are asked to select which ECU information you would like displayed.

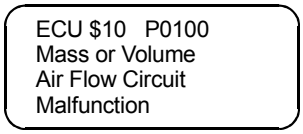


To display Pending DTCs, do the following:

1. Select F2: DTCs from the SELECT MODE menu.
2. Select F3: pending DTCs from the DTCs menu.

3. Select the ECU from which you choose to monitor data (for vehicles with multiple ECUs only). The message “Waiting For Data” is displayed, followed by the PENDING DTCs information.

A detailed description can be displayed for any pending DTC by moving the * next to the desired code and pressing ENTER. The * is moved by pressing the arrow keys.

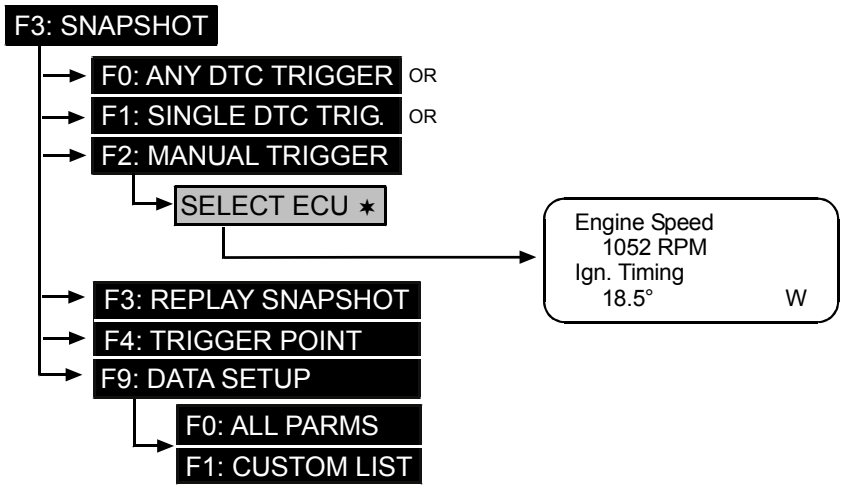


ACTIVE KEYS	
ENTER	Displays description of the pending DTC.
↑ / ↓	Move marker.
EXIT	Exits to SELECT MODE menu.

MODE F3: SNAPSHOT

Setup

The SNAPSHOT mode helps you isolate an intermittent or transient problem by storing data parameters before or after the problem occurs. The information can be saved and used for a later replay or hardcopy print option.



*For vehicles with multiple ECUs only.

To display Snapshot information, do the following:

1. Select F3: SNAPSHOT from the SELECT MODE menu.
2. Select any of the available trigger types from SNAPSHOT menu.

3. Data from only one ECU can be saved in tester memory. Therefore, if multiple ECUs are detected, you will be asked to select one of the ECUs.
4. To choose which snapshot parameters are displayed, press F9 to select DATA SETUP from the SNAPSHOT menu. After selecting F9: DATA SETUP, refer to F0: ALL PARMS and F1: CUSTOM LIST PARAMETERS in the DATA LIST section for displaying all parameters or selecting a custom list of parameters.

Submode F4: Trigger Point

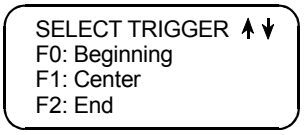
Trigger Types

In the SNAPSHOT mode, data is saved in the tester while it is waiting for a trigger condition. Once the trigger occurs, data continues to be saved in the tester's memory until the memory is full. Snapshot menu allows you to start the snapshot process by selecting a trigger mode. Three types of triggers can be selected:

KEYPRESS	DESCRIPTION
F0: ANY DTC	Snapshot trigger on the occurrence of any DTC.
F1: SINGLE DTC	Snapshot trigger on the occurrence of a single DTC that you specify.
F2: MANUAL TRIG.	Snapshot trigger by an ENTER, EXIT, or F9 key press.

Trigger Point Setup

The snapshot menu allows you to select how much data is saved after trigger occurs by selecting F4: TRIG. POINT from the SNAPSHOT menu screen. To change the trigger point, select the key next to the desired point. This trigger point is saved as long as the tester has power.



Submode F3: Snapshot Replay

Snapshot Data Capture

When the trigger type is selected, the tester displays a status message in the form of a flashing W indicating that the tester is storing data and waiting for the trigger.

While waiting for a trigger to occur, you can press the ENTER, EXIT, or F9 key at any time to trigger the snapshot manually regardless of the trigger type selected.

When a trigger has occurred, the flashing W will change to a constantly displayed T.

When the tester memory is full, the tester displays an 0 to indicate that the snapshot is complete. Pressing EXIT after a trigger has occurred will end the data capture phase.

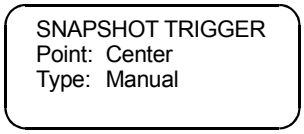
Once you have captured snapshot data, you can examine it by pressing F3 from the SNAPSHOT menu. Use the ↑ and ↓ keys to scroll through the samples. The last snapshot is retained in the tester unless:

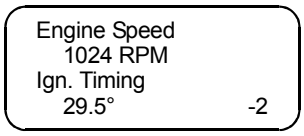
- It is overwritten by a new snapshot.
- A new application is selected from the application menu.
- A new master cartridge is installed in the tester.
- The tester is unplugged from power for more than 24 hours.

You can review the captured snapshot in one of two ways:

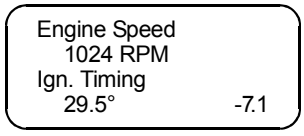
- Replay a snapshot after communication is established by selecting F3: SNAPSHOT REPLAY from SNAPSHOT menu.
- Without vehicle communications, select F1: Replay Snapshot Data from the MAIN menu (this menu option is only displayed if a snapshot has been taken).

When the SNAPSHOT REPLAY mode is first entered, the tester displays information about the saved snapshot. The snapshot's trigger point (Beginning, Center, or End) and trigger type (Manual, Any DTC or Single DTC) are displayed for a couple seconds before the snapshot data is displayed. When replaying a saved snapshot, the sample at the time of the trigger is initially displayed. Samples before and/or after the trigger can be viewed by pressing the ↑ and ↓ keys to scroll through the samples.





The sample number of a snapshot is displayed in the lower right of the display screen. This index number will initially be a 0; samples after the trigger will be displayed as positive numbers and samples before the trigger will be displayed as negative numbers. While replaying a snapshot, pressing ENTER will cause the software to toggle between the sample index and the sample time. The sample time display gives the time in seconds (relative to the trigger sample) at which the Tech 1 received the currently displayed sample. For example, a sample time of +3.4 means the sample was received 3.4 seconds after the trigger sample. A sample time of -2.6 seconds means the sample was received 2.6 seconds before the trigger.



ACTIVE KEYS	
YES / NO	Scroll through displayed data parameters.
↑ / ↓	Scroll through samples.
F0	Mark top displayed parameter as fixed for creating your own data pairs.

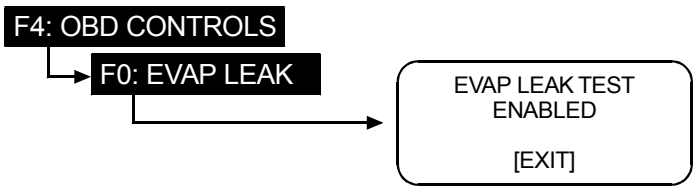
ACTIVE KEYS (Continued)	
F1	Mark bottom displayed parameter as fixed for creating your own data pairs.
F2	Display trouble codes for current sample.
F3	Toggle the data descriptor line with the Parameter Identification (PID) number and the ECU number.
F4	Display first (earliest) sample.
F5	Display trigger sample (0).
F6	Display last (most recent) sample.
F7	Toggle unit conversions for applicable parameters.
F8	Print data list (if equipped with serial printer).
EXIT	Return to SNAPSHOT menu.

MODE F4: OBD CONTROLS

The OBD CONTROLS mode allows you to perform individual output controls to check for proper vehicle component or system operation. The OBD CONTROLS that you can control depend on the vehicle under test.

Submode F0: Evap Leak

The EVAP LEAK test is used to enable the conditions required to conduct an evaporation system leak test. Selecting F0: EVAP LEAK does not actually run the test, but instead closes the system, preventing leakage. Off-board test equipment can then be used to test the vehicle's evaporative emission system. The vehicle manufacturer is responsible for automatically aborting the leak test when necessary.

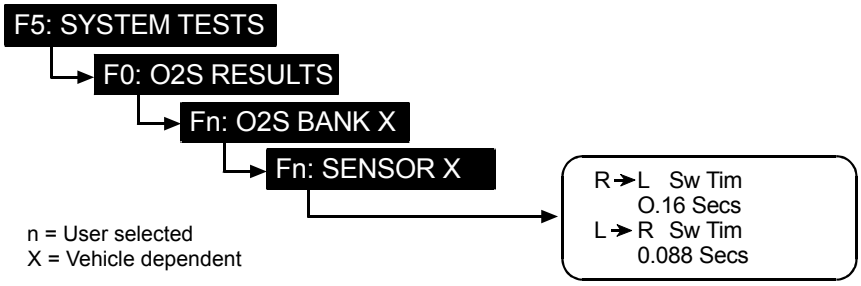


If the conditions necessary to run the evaporative emissions system leak test are not correct, the vehicle ECU may respond with a manufacturer defined reason the test cannot be run or may not respond at all. If the vehicle PCM does not support OBD CONTROLS, the tester will display “No Control Tests Supported” when the OBD CONTROLS test mode is selected.

MODE F5: SYSTEM TESTS

Submode F0: O2S Results

The Oxygen Sensor (O2S) Results mode allows the tester to display the results of the oxygen sensor testing performed by the vehicle's engine controller. These tests are “once per trip” tests and are performed after the ignition is turned on under conditions defined by the vehicle manufacturer. The O2S RESULTS mode is not available for all vehicles. Some vehicles use the other results test mode to report results of O2S testing.



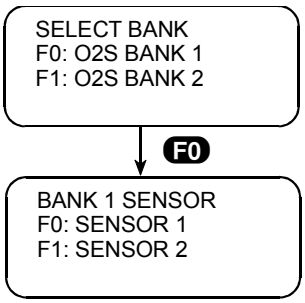
To display O2S Results, do the following:

1. Select F5: SYSTEM TEST from the SELECT MODE menu.
2. Select F0: O2S RESULTS from the SELECT TEST menu.
3. Select the desired bank from SELECT BANK menu.
4. Select the desired oxygen sensor from the BANK and SENSOR menu. The message “WAITING FOR DATA” is displayed, followed by the Oxygen Sensor data display.

If the tester displays the warning message indicating that the O2S MONITORING TEST RESULTS may not be valid, the vehicle ECU is reporting that the O2S tests have not been completed or that the selected ECU does not monitor the O2S tests. The status of the oxygen sensor tests can be monitored in F1: READINESS TEST MODE under the value of OXYGEN SENSOR MONITORING For some vehicles, O2S test results may not be available until all readiness tests have been completed.

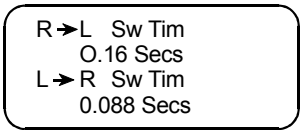
O2 Sensor Test Menu

The vehicle can provide O2S test results for up to 8 oxygen sensors. When O2S RESULTS is selected, the tester queries the ECU to determine which oxygen sensors are present. It then displays a list of these sensors so that you can select which sensor's test results to examine. To select a bank or sensor, press the number listed on the left. Refer to Appendix B: OBD II OXYGEN SENSOR LOCATION INFORMATION for a discussion of oxygen sensor locations. If there is no response to the query, the tester displays a warning message indicating that the O2S Test results may not be supported.



O2S Data Display

Once the sensor has been selected, the tester determines which O2 sensor data parameters are available for display. It then displays data for each of the parameters. The parameters vary depending on the vehicle manufacturer. Only parameters which are supported by the vehicle ECU are displayed.



The OXYGEN SENSOR MONITORING TEST RESULTS are reported as constants programmed in the vehicle ECU or calculated values by the vehicle ECU. See the following table for programmed and calculated data parameters

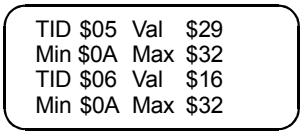
PARAMETER	TID	TYPE
R>>L O2S V	$01	Constant
L>>R O2S V	$02	Constant
LOW SW V	$03	Constant
HIGH SW V	$04	Constant
R>>L SW TIM	$05	Calculated
L>>R SW TIM	$06	Calculated
MIN O2S V	$07	Calculated
MAX O2S V	$08	Calculated
O2S TRANS T	$09	Calculated

NOTE

Parameter IDs greater than 9 are manufacturer-specific and are therefore defined only by an ID preceded by a $ (e.g., $70 and $71 for Chrysler O2S test results). Refer to the vehicle's service manual to determine how to interpret these parameters.

Additional O2S Information

Pressing F5 while the O2S RESULTS data is being displayed will cause the tester to display additional information about the displayed parameters. The tester displays the Test ID number (TID) along with hexadecimal displays of the current data value (Val), the ECU programmed minimum value (Min) and the maximum ECU programmed value (Max) for this parameter. Min and Max are values reported by the ECU. Val should be within those limits.

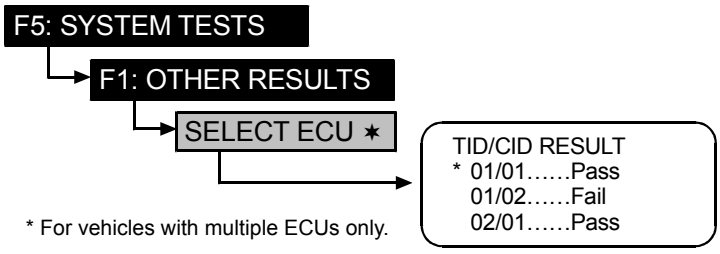


ACTIVE KEYS	
YES / NO	Scroll through displayed data parameters.
F0	Mark top displayed parameter as fixed for creating your own data pairs; unlock bottom parameter if fixed.
F1	Mark bottom displayed parameter as fixed for creating your own data pairs; unlock top parameter if fixed.
F3	Toggle the data descriptor line with the Parameter Identification (PID) number and the ECU number.
F4	Toggle the data descriptor line with the Test Identification (TID) number and the oxygen bank and sensor.
F5	Toggle the data descriptor line with the Test Identification (TID) number and the hexadecimal equivalent of the received data. The calculated value line is toggled with the Min and Max values received from the ECU for that TID.
F8	Print data list (if equipped with serial printer).
EXIT	Return to SELECT MODE menu.

Submode F1: Other Results

The OTHER RESULTS test mode is similar to the O2 sensor test results. Some manufacturers use this mode as an alternate means of reporting O2 sensor test results. In this mode, the vehicle's ECU reports data for various Test IDs (TIDs) and Component IDs (CIDs) that are specified by the vehicle manufacturer. Descriptions for the TIDs and CIDs are available in the vehicle service manual or from the manufacturer.

If the vehicle you are testing contains more than one OBD II ECU, you will be asked to select which ECU information you would like displayed.

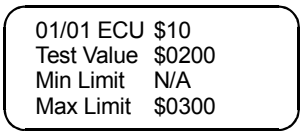


To display Other Results, do the following:

1. Select F5: SYSTEM TESTS from the SELECT MODE menu.
2. Select F1: other results from the SELECT TEST menu.
3. Select the ECU from which you choose to monitor data (for vehicles with multiple ECUs only). The message “Waiting For Data” is displayed, followed by the OTHER RESULTS test information.

In addition to reporting data for these TIDs and CIDs, the vehicle reports test limits (minimum, maximum, or both) for acceptable operation. The tester compares the data with the test limits and displays a PASS or FAIL indication for each TID and CID. The actual received data can be viewed by moving the star cursor (*)

with the arrow keys to the desired item and pressing ENTER. If N/A (not available) is displayed for a limit, then the ECU did not send a value for that limit.



ENTER	Displays actual received data.
↑ / ↓	Move marker.
EXIT	Return to SYSTEM TESTS menu.

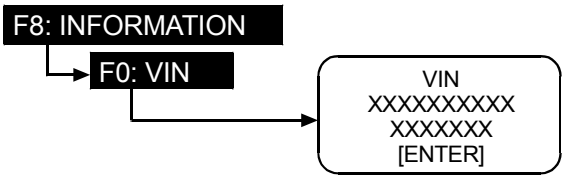
MODE F8: INFORMATION

The information mode is used to enable you to request vehicle specific information from the vehicle ECU, such as VIN, Software Calibration ID, or Software Verification Number.

If the vehicle PCM does not support vehicle PCM information, the tester will display “No Vehicle Info Supported” when the INFORMATION mode is selected.

Submode F0: VIN

The VIN selection allows you to electronically read the Vehicle Identification Number that is stored in the vehicle's ECU. This mode is only selectable when it is supported by the vehicle ECU.

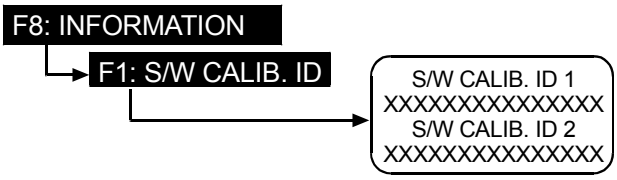


To display the VIN, do the following:

1. Select F8: INFORMATION from the SELECT MODE menu.
2. Select F0: VIN from the SELECT TYPE menu.

Submode F1: S/W CALIB. ID

The S/W CALIBRATION ID selection is used for identification of the software calibration contained within the vehicle ECU. Each software calibration ID uniquely identifies the software installed in the ECU. Multiple calibration IDs may be reported for a ECU, depending on software architecture. A calibration ID number will have at least one unique software verification number. This mode is only selectable when it is supported by the vehicle ECU.

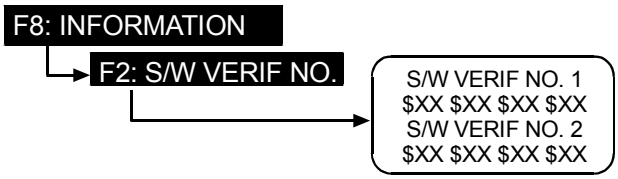


To display the Software Calibration ID, do the following:

1. Select F8: INFORMATION from the SELECT MODE menu.
2. Select F1: S/W CALIB. from the SELECT TYPE menu.

Submode F2: S/W VERIF ID.

The SOFTWARE VERIFICATION NUMBER selection is used for determining whether emission-related calibrations within the ECU software have been altered. Software Verification Numbers are calculated based on memory content at the time of the request. Any changes to calibration will be detected in the Software Verification Number. This mode is only selectable when it is supported by the vehicle.



To display the Software Verification Number, do the following:

1. Select F8: INFORMATION from the SELECT MODE menu.
2. Select F2: S/W VERIF NO. from the SELECT TYPE menu.

NOTE

Multiple Software Verification Numbers may be reported by an ECU. Each Software Verification Number will correspond to a unique Software Calibration ID number.

NOTE

Turn the engine off when requesting the Software Verification Number from the vehicle ECU. Failure to turn the engine off may cause the ECU to require more time to calculate the calibration number and may therefore not respond to the request.

MODE F9: OBD II TOOLPAK

The OBD II Toolpak is used to help diagnose and troubleshoot OBD II compliant powertrain control systems. Using the OBD II Toolpak mode provides you with pertinent text and data so you can learn about and more efficiently diagnose the vehicle under test.

Examples of data features contained within the program are:

- Vehicle preparation

- Diagnostic procedures
- Repair verification
- Diagnostic data parameter descriptions
- Diagnostic data parameter common values
- Diagnostic Trouble Code (DTC) Library
- Readiness Test description
- Oxygen sensor location information
- Oxygen sensor type information
- Oxygen sensor maintenance information

When using this application cartridge on 1994 to current OBD II compliant PCM vehicles, the cartridge will display diagnostic data parameters based on Society of Automotive Engineers (SAE) recommended practice J1979. Additionally, the basic functions contained within this cartridge are required by California Air Resources Board (California ARB) as part of the On-Board Diagnostics level II (OBD II).

Selecting OBD II Toolpak Mode

The OBD II Toolpak functions can be entered in two ways: from the main menu or from the Select Mode menu.

From the OBD II Menu

Entering F9: OBD II Toolpak from the main menu is available any time power is applied to the tester.

From the Select Mode Menu

Entering F9: OBD II Toolpak from the Select Mode menu is only available after communication with the OBD II compliant vehicle has been initialized.

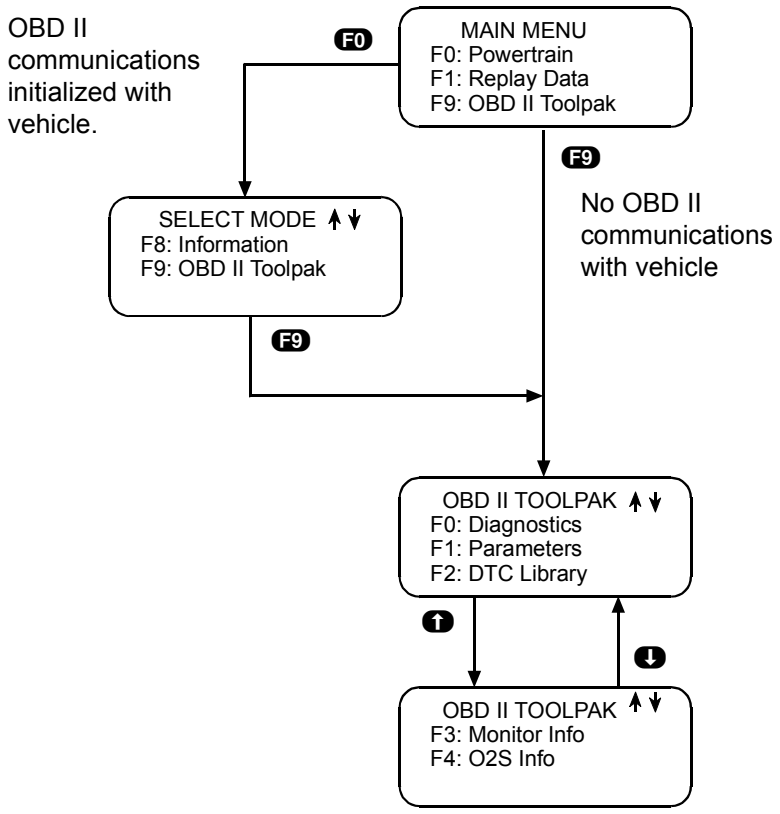


FIGURE 1-4. Selecting OBD II Toolpak from the Select Mode Menu

Submode F0: Diagnostics

The F0: Diagnostics mode provides the following information:

- How to prepare a vehicle powertrain system for testing.
- How to perform a diagnostic approach using each of the software modes on OBD II compliant vehicles.
- How to verify a repair using the modes is contained in the F0: Diagnostics mode.

Submode F0: Prep Vehicle

The Prep Vehicle mode is used to properly prepare the vehicle powertrain for diagnostic procedures. Following the instructions in this mode will ensure that the vehicle system is preconditioned and ready for diagnostic testing.

To prep the vehicle for diagnostic testing, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F0 to select Diagnostics from the OBD II Toolpak menu.
3. Press F0 to select Prep Vehicle from the Diagnostics menu.
4. Review and answer the prompts that are displayed on the screen using the YES and NO keys. Use ↑ or ↓ to advance through the text description screens.
5. Press EXIT to return to the previous menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
YES / NO	Answer question or query.
ENTER	Advance to the next menu.
EXIT	Exit to the previous question.

Submode F1: Procedure

The OBD II system represents the latest in on-board failure detection strategies. Strategies such as misfire detection, component, and fuel system status are some examples of diagnostic data that can be obtained from the OBD II system.

Along with the new, more stringent methods of failure detection came standardized diagnostic test modes. These standardized test modes are supported in the Asian Imports software program as modes F0 through F8. After using Asian Imports software modes F0-F8 you will notice new types of diagnostic data that are displayed on the tester.

F1: Diagnostic Procedure is designed to assist you in learning how to diagnose an OBD II system fault or assess current system condition. While there are many approaches that can be used, there is no one right way to perform this task.

This submode helps formalize a strategy and teaches you how, using a sensible approach, to use the Asian Imports software modes F0-F8 and determine a solution to a problem within the OBD II system.

To select Procedure from the Diagnostics menu, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F0 to select Diagnostics from the OBD II Toolpak menu.
3. Press F1 to select Procedure from the Diagnostics menu.

   First time users: to ensure proper operation, this mode is best reviewed before actual testing on the vehicle is performed. Prior to the testing it will be to your advantage to know the answers to the following:

   - Is the MIL on?
   - Are DTCs present? If so, record the DTC numbers.
   - Is the fuel tank cap installed and is it tight (3 clicks)?
   - Is the fuel tank level greater than 15% of total volume?
4. Press ↑, ↓, YES, NO, or ENTER to review and answer the prompts displayed on the screen, and to read any key help screens that may be displayed for navigation help.
5. Press EXIT to return to the previous question or test menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
YES / NO	Answer question or query.
ENTER	Advance to the next menu.
EXIT	Exit to the previous question or test menu.

Submode F9: Repair Verification

After repairs are made to a vehicle powertrain system, the status of system DTCs and monitor tests should be checked. Using this submode will help determine the effectiveness of repairs just completed to the system using the test modes within the Asian Imports program, including the importance of manufacturer OBD II drive cycle and monitor completion after repairs.

To verify the repairs, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F0 to select Diagnostics from the OBD II Toolpak menu. The key help screen will be displayed.
3. Press F9 to select Repair Verification from the Diagnostics menu.

   First time users: to ensure proper operation, this mode is best reviewed before actual testing on vehicle is performed.
4. Use the ↑ and ↓ keys to review the prompts that are displayed on the screen. Read any key help screens that may be displayed for navigation help.

> **NOTE**
>
>
>
> For automobile manufacturer drive cycle information, refer to the service manual for the vehicle that is currently being tested.

5. Press EXIT to return to the previous question or test menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
EXIT	Exit to the previous question or test menu.

Submode F1: Parameters

The Parameters submode displays text descriptions for each diagnostic data parameter displayed in the Asian Imports software application. Common high and low values for each diagnostic data parameter are also available for reference.

> **NOTE**
>
>
>
> When the tester is connected to the vehicle and Data List is selected, the total number of displayed diagnostic data parameters will depend on the vehicle ECU calibration. This is not a function of the tester.

Submode F0: Definitions

The text descriptions of each diagnostic data parameter are available when the tester is connected to a vehicle and a live data list is displayed, or during a shop or training review session and the tester is not connected to a vehicle.

To display Parameter descriptions (Viewing on-vehicle live data list), do the following:

1. Set up and display a data list using F0: Data List.
2. Scroll through the Data List until the parameter for which you want information is displayed. Press F0 to select the top parameter, or press F1 to select the bottom parameter. An asterisk (*) will appear next to the selected parameter.
3. Press ENTER to display the first text screen for the selected parameter. Press ↓ to advance through the text description screens. Press ↑ to view the previous text description screen.
4. To select a different parameter, press EXIT to return to the Data List parameter pair screen. Press the opposite function key used to select the previous parameter (F0 or F1) to deselect the parameter. The asterisk (*) will disappear.

   Scroll through the Data List until a parameter for which you want information is displayed. Repeat Steps 2 and 3.
5. Press EXIT to return to the Data List parameter pair screen or Select Mode menu.

To display Parameter descriptions (Not viewing on-vehicle live data list), do the following:

1. Press F9 to select OBD II Toolpak.
2. Press F1 to select Parameters from the OBD II Toolpak menu.
3. Press F0 to select Definitions from the Parameters menu. The key help screen will be displayed.
4. Press ↑ or ↓ to move the cursor to the desired diagnostic data parameter.
5. Press ENTER to display the first text screen for the selected parameter. Press ↓ to advance through the text description screens. Press ↑ to view the previous text description screen.
6. Press EXIT to return to the Parameter Definition list or the Parameters menu.

ACTIVE KEYS	
F9	Select OBD II Toolpak.
↑ / ↓	Scroll up and down.
F0 / F1	Select or deselect a parameter.
ENTER	View parameter description.
EXIT	Exit to the previous test menu.

Submode F1: Ranges

Common high and low values for each diagnostic data parameter are available when connected to a vehicle and viewing a live data list, or during a shop or training review session. Current diagnostic data parameter values are available during connection to the vehicle powertrain system. The common high and low values were obtained by collecting data from actual OBD II certified I4, V6, and V8 powertrain systems operating with no faults detected.

To view common high and low values for diagnostic parameters, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F1 to select Parameters from the OBD II Toolpak menu.
3. Press F1 to select Ranges from the Parameters menu. The key help screen will be displayed.
4. Press ↓, ↑, or ENTER to advance through the text description screens. These text screens indicate that the displayed common high and low values are from actual OBD II certified systems.
5. Press ↑ or ↓ to move the cursor to the desired data parameter.
6. Press ENTER to display the first data condition screen for the selected parameter. The data condition screen displays the condition for which the high/low data is valid. The data condition and parameter name will toggle on the first display line. The YES or NO keys can be used to toggle between the data condition and the parameter name.
7. Press ↑ or ↓ to advance through the data conditions. As before, The data condition and parameter name will toggle on the first display line. The YES or NO keys can be used to toggle between the data condition and the parameter name.

The data conditions are listed in the following table:

DATA CONDITION	DISPLAY, LINE 1
key on, engine off	Key On, Eng Off:
key on, engine running at idle	KOER, IDLE RPM:
key on, engine running at 2500 RPM	KOER, 2500 RPM:
key on, engine running, in drive, 0 MPH	KOER-DRV, 0MPH:
key on, engine running, in drive, 15 MPH	KOER-DRV, 15MPH:
key on, engine running, in drive, 25 MPH	KOER-DRV, 25MPH:
key on, engine running, in drive, 35 MPH	KOER-DRV, 35MPH:
key on, engine running, in drive, 45 MPH	KOER-DRV, 45MPH:
key on, engine running, in drive 55 MPH	KOER-DRV, 55 MPH:
key on, engine running, in drive, wide open throttle acceleration	KOER-DRV, WOT:
key on, engine running, in drive, closed throttle deceleration	KOER-DRV, CTD:

8. The actual value for the current parameter is displayed on line 2 (ONLY if the tester is connected to an OBD II system and F9: OBD II Toolpak is selected from the select mode menu). If the tester is not connected to an OBD II system and F9: OBD II Toolpak has not been selected from the select mode menu only the common high and low values are displayed.
9. Common high (hi) and low (lo) parameter values for the data condition are displayed on lines 3 and 4 (common high and low values were obtained from actual vehicle powertrain systems with OBD II certified systems).
10. Press EXIT to return to the parameter list or Parameters menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
ENTER	Select parameter to view.
YES & NO	Toggle display.
EXIT	Exit to the previous test menu.

Submode F2: DTC Library

An OBD II ECU is capable of setting a DTC which indicates the failed circuit or component. In some cases, reading DTCs from the ECU may reveal multiple stored DTCs. However, the ECU is programmed to potentially store several hundred DTCs.

F2: DTC Library enables you to obtain text description information for each powertrain DTC available for display. The DTC Library consists of a combination of DTCs defined by the manufacturer specifically for the vehicle under test and DTCs defined by the Society of Automotive Engineers (SAE). For any DTC number that is not defined by the manufacturer of the vehicle under test, a description defined by Society of Automotive Engineers (SAE) recommended practice J2012 will be displayed. A specific DTC may be entered individually or you can scroll through the entire DTC list.

To display the DTC Library, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F2 to select DTC Library from the OBD II Toolpak menu. The key help screen will be displayed.
3. Use the tester keys 0 - 9 to enter the four digit number of the DTC for which information is desired.
4. Press ENTER to display the DTC number and text description. Use ↑ or ↓ to scroll through the DTC list. Holding the ↑ or ↓ key causes continuous scrolling. A text description of the code will be displayed.
5. Press EXIT to return to the enter DTC number screen or the OBD II Toolpak menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
0 - 9	Enter DTC Number.
ENTER	View DTC description.
EXIT	Exit to the previous test menu.

Submode F3: Readiness Information

Readiness Tests represent a segment of new legislated diagnostic information that can be displayed by the tester. A Readiness Test is a specific test that the ECU performs. When the ECU runs a Readiness Test, it tests the particular portion of the electronic powertrain control system (Catalyst, O2S Sensor, etc.) for the respective monitor. Readiness Tests can reveal the status of the system and it is recommended that service technicians become familiar with Readiness Tests when working on OBD II compliant systems.

To display Readiness Test information, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F3 to select Readiness Test from the OBD II Toolpak menu. The key help screen will be displayed.
3. Press ↑ or ↓ to move the cursor to the desired Readiness test.
4. Press ENTER to display the first text screen for the selected Readiness test. Press ↓ to advance through the text description screens. Press ↑ to view the previous text description screen.
5. Press EXIT to return to the select monitor list or the OBD II Toolpak menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
ENTER	Select monitor to view.
EXIT	Exit to the previous test menu.

Submode F4: O2S Information

On-Board Diagnostic (OBD) and On-Board Diagnostic generation I (OBD I) system's oxygen sensor (O2S) has been a major component within an electronic powertrain control system. In those systems, the upstream (ahead of catalytic converter) O2S sensor is used to detect air/fuel ratios ahead of the catalytic converter.

With OBD II, the system now uses an additional oxygen sensor that is placed downstream of the catalytic converter. The addition of a downstream oxygen sensor enables the PCM to perform a catalytic converter efficiency test. As a result of OBD II's downstream oxygen sensors, vehicle equipment may include many oxygen sensors on a vehicle; for example, a vehicle with dual exhaust and two separate catalytic converters can have four O2 sensors.

Using F4: O2S Information a text based description of expected O2S locations, nomenclature, type used, plus how to inspect, torque, and remove and replace O2Ss is displayed.

Submode F0: Location

This mode is used to obtain information on oxygen sensor identification (bank number and sensor number) for the vehicle under test. A sample of actual vehicles with OBD II was used to determine the unique types of exhaust type, number of catalytic converters and oxygen sensors. This information was then arranged in a way that you can select the configuration based on vehicle equipment.

Using this mode can assist you in learning about the OBD II system's new oxygen sensor naming and location conventions.

NOTE

Use of this mode requires knowledge of the vehicle's emissions equipment configuration: exhaust type (dual, single, single with a “y” connection), number of catalytic converters, and number of oxygen sensors.

Refer to the Appendix B for further OBD II Oxygen Sensor Location information.

To obtain Oxygen Sensor information, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F4 to select O2S Information from the OBD II Toolpak menu.
3. Press F0 to select Location from the O2S Information menu. The key help screen will be displayed. Press ENTER or wait to advance.
4. A series of information screens will appear. They remind you to review and obtain the following information from the vehicle configuration:
   - exhaust type (dual, single, single with a “y” connection)
   - total number of catalytic converters
   - total number of oxygen sensors

   Press ENTER or wait to advance.
5. Using information obtained in step 4, select exhaust system type.
6. Using information obtained in step 4, select number of catalytic converters (if required).
7. Using information obtained in step 4, select number of oxygen sensors (if required).
8. A confirmation screen with your selected data is displayed. The key help screen will be displayed. Press ENTER or wait to advance.
9. Press ↓ to advance through the text description screens. Press ↑ to back up through the text description screens. These text screens contain bank number and sensor number information that the OBD II system uses for its naming convention. Using this information will help your understanding of the OBD II system.
10. Press EXIT to return to previous menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
F0	Select O2S location, exhaust system, number of catalytic converters, number of oxygen sensors.
F1	Select exhaust system, number of catalytic converters, number of oxygen sensors.
F2	Select exhaust system, number of oxygen sensors.
F4	Select O2S Information.
ENTER	Advance program from current screen.
EXIT	Exit to the previous test menu.

Submode F1: Type

Mode F1: Type provides text based information about how the electronic powertrain control system utilizes heated (upstream and downstream) and non-heated (upstream and downstream) oxygen sensors. Information on sensor signal, PCM use, and heater operation is provided. This mode can assist you in learning about the importance of an OBD II system's oxygen sensor based on the types of O2Ss that are currently used on vehicles.

NOTE

Use of this mode requires knowledge about the oxygen sensor type (upstream, downstream, heated, non-heated) for the current vehicle under test.

To display information about how the electronic powertrain control system utilizes oxygen sensors, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F4 to select O2S Info from the OBD II Toolpak menu.
3. Press F1 to select Type from the O2S Information menu. The key help screen will be displayed. Press ENTER or wait to advance.
4. Press F0 to select upstream oxygen sensor or F1 to select downstream oxygen sensor.
5. Press F0 to select heated oxygen sensor or F1 to select non-heated oxygen sensor.
6. Press ↓ to advance through the text description screens. Press ↑ to back up through the text description screens. These text screens contain oxygen sensor (O2S) signal information and O2S use information for each sensor type. Using this information will help your understanding of the OBD II system.
7. Press EXIT to return to the previous menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
F0	Select upstream or heated O2S.
F1	Select downstream or non-heated O2S.
ENTER	Advance program from current screen.
EXIT	Exit to the previous test menu.

Submode F2: Maintenance

Mode F2: Maintenance provides three submodes of text based information on the inspection, torque specification, and standard removal & replacement description for oxygen sensors. Using F2: Maintenance can help you understand and review O2S sensor inspection, O2S sensor torque requirements, and guidelines for O2S sensor removal and replacement.

- **Submode F0: Inspection**

Mode F0: Inspection provides information about O2S contamination, how to check signal full range operation, and recommended O2S sensor change intervals.

To display information about O2S contamination, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F4 to select O2S Information from the OBD II Toolpak menu.
3. Press F2 to select Maintenance from the O2S Information menu.

4. Press F0 to select Inspection from the select maintenance menu. The key help screen will be displayed. Press ENTER or wait to advance.
5. Press ↑ to advance through the text description screens. Press ↓ to back up through the text description screens. These text screens contain oxygen sensor (O2S) contamination information, how to check O2S sensor full range operation, and expected O2S sensor signal range.
6. Press EXIT to return to the previous menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
F0	Select Inspection.
F2	Select Maintenance.
F4	Select O2S Information.
ENTER	Advance program from current screen.
EXIT	Exit to the previous test menu.

- **Submode F1: Torque Specification**

Mode F1: Torque Specification provides information about O2S installation and O2S Torque requirements.

To display information about O2S installation and O2S Torque requirements, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F4 to select O2S Information from the OBD II Toolpak menu.
3. Press F2 to select Maintenance from the O2S Information menu.
4. Press F1 to select Torque Specification from the select maintenance menu. The key help screen will be displayed. Press ENTER or wait to advance.
5. Press ↓ to advance through the text description screens. Press ↑ to back up through the text description screens. These text screens contain oxygen sensor (O2S) installation information and O2S Torque requirements.
6. Press EXIT to return to the previous menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
F1	Select Torque Specification.
F2	Select Maintenance.
F4	Select O2S Information.
ENTER	Advance program from current screen.
EXIT	Exit to the previous test menu.

- **Submode F2: Remove and Replace**

Mode F2: Remove and Replace provides standard O2S removal and replacement information. Removal information for O2 sensors describes a proper method of how to remove an O2S from the vehicle, and replacement information for O2 sensors describes a proper method of how to replace an O2S into the vehicle. This mode describes a sound method of O2S sensor removal and replacement based on automobile manufacturer procedures.

To display O2S removal and replacement information, do the following:

1. Press F9 to select OBD II Toolpak from the Select Mode menu.
2. Press F4 to select O2S Information from the OBD II Toolpak menu.
3. Press F2 to select Maintenance from the O2S Information menu. O2S Removal

O2S Removal

4. Press F0 to select Remove from the O2S R&R information menu. The key help screen will be displayed. Press ENTER or wait to advance.
5. Press ↑ to advance through the text description screens. Press ↓ to back up through the text description screens. These text screens contain items to watch out for during oxygen sensor (O2S) removal from the vehicle exhaust pipe.
6. Press EXIT to return to previous menu.

O2S Replacement

7. Press F1 to select Replace from the O2S R&R information menu. The key help screen will be displayed. Press ENTER or wait to advance.
8. Press ↓ to advance through the text description screens. Press ↑ to back up through the text description screens. These text screens contain items to watch out for during oxygen sensor (O2S) installation into the vehicle exhaust pipe.
9. Press EXIT to return to previous menu.

ACTIVE KEYS	
↑ / ↓	Scroll up and down.
F0	Select Remove O2S Info.
F1	Select Replace O2S Info.
F2	Select O2S Remove and Replace Info.
F4	Select O2S Information.
ENTER	Advance program from current screen.
EXIT	Exit to the previous test menu.

5. ASIAN IMPORTS DIAGNOSTIC DATA PARAMETERS

The following are the generic diagnostic data parameters defined by the SAE for OBD II vehicles. Not all parameters are displayed for all vehicles. Prior to displaying data, the tester queries the vehicle to determine which parameters are available for that vehicle.

AIR STATUS

STATES
UPSTRM, DNSTRM, ATM/OFF,RSRVD

Air Status displays information about the OBD II system's commanded secondary or auxiliary air injection diverter valve position. The possible states are diverting secondary air upstream of the first catalytic converter (UPSTRM), downstream of the first catalytic converter (DNSTRM), or venting to the atmosphere (ATM/OFF). RSRVD is applicable for future applications.

ECT (°)

UNITS	RANGE
°F	-40 to +419
°C	-40 to +215

Engine Coolant Temperature (ECT) is an analog input to the ECU. This parameter provides a temperature indication of engine coolant near the ECT sensor. ECT sensors can be located in the intake manifold, cylinder head, or water pump housing. Typical ECT is 200 °F (warm engine at idle). Note that the (°) in parenthesis indicates the parameter is temperature-related.

ENGINE LOAD

UNITS	RANGE
%	0 to 100

Engine Load is derived by the ECU from a measure of current engine airflow divided by engine peak airflow. Engine Load directly increases with throttle angle and drive conditions and is an indicator of percent engine capacity in any given operating mode. Engine Load is typically 5% at engine idle and 80% or greater during Wide Open Throttle (warm engine).

ENGINE SPEED

UNITS	RANGE
RPM	0 to 8000

Engine Speed is an indication of crankshaft revolutions per minute. The ECU uses input engine speed to make determinations about current engine operating conditions and the operation of various engine management system output components.

FT-O2S B1 S1 FT-O2S B2 S1 FT-O2S B1 S2 FT-O2S B2 S2 FT-O2S B1 S3 FT-O2S B2 S3 FT-O2S B1 S4 FT-O2S B2 S4

UNITS	RANGE
%	-100 to +100

Fuel Trim-Oxygen Sensor (FT-O2S) Bx Sx represents the short-term correction to fuel injection that may be adopted by the ECU. In this case, oxygen sensor fuel trim represents the ECU's determination of exhaust gas oxygen content and relates the data to a short-term adjustment to fuel strategy, based on information obtained from the applicable O2S. Associated with the OBD II system and the parameter label are Bx and

Sx. Bx refers to Bank 1 or 2 and Sx refers to the sensor in positions 1, 2, 3, or 4. Refer to Appendix B: OBD II Oxygen Sensor Location Information for a more complete description of the O2S naming convention.

FUEL PRESSURE

UNITS	RANGE
kPa	0 to 765
psi	0 to 111

Fuel Pressure data parameter is a gauge measure of the engine fuel rail pressure. The fuel pressure parameter can be displayed in metric units (kPa) or in English units (psi).

FUEL STATUS 1
FUEL STATUS 2

STATES
OPEN LOOP/CLOSED LOOP OL-DRIVE/OL-FAULT/CL-FAULT/ RESERVED/UNUSED

Fuel Status represents fuel control status of the feedback loop between the vehicle ECU and the oxygen sensor. Fuel Status can be displayed for both Bank 1 and Bank 2. If only Bank 1 is used for fuel control, FUEL STATUS 2 is displayed as UNUSED. The states of Fuel Status can be Open Loop, Closed Loop, Open Loop due to vehicle being driven at wide open throttle or coasting (OL-DRIVE), Open Loop due to a fault with the OBD II system (OL-FAULT), Closed Loop with only one oxygen sensor being used for fuel control and a fault with at least one oxygen sensor (CL-FAULT), or a display of a reserved status (RESERVED), which is used for future support.

IAT (°)

UNITS	RANGE
°F	-40 to +419
°C	-40 to +215

Intake Air Temperature (IAT) is an analog input to the ECU. This parameter provides a temperature indication of engine intake air temperature as it flows across the IAT sensor. IAT sensors can be located in the intake manifold, intake air plumbing, or airbox. Typical IAT is 140 °F (warm engine at idle). Note that the (°) in parenthesis indicates the parameter is temperature related.

IGN. TIMING

UNITS	RANGE
°	-64 to +64

Spark Advance (IGN. Timing) is the amount of ignition electronic spark advance that the ECU is currently commanding. The amount of ignition spark advance is based on several inputs to the ECU (engine load, throttle angle, engine temperature, etc.) and a lookup table in the ECU's memory. For OBD II systems, Spark Advance should be the timing advance for cylinder number 1 and does not include mechanical advance (if applicable). Spark Advance increases with engine RPM, and a typical value is 10-20 degrees at idle (warm engine).

LT FT 1
LT FT 2

UNITS	RANGE
%	-100 to +100

Long-Term Fuel Trim (LT FT) is the measure of adaptive or feedback fuel correction strategy for the injection of fuel into the engine. Long-Term Fuel Trim represents the ECU's steady long-term adjustment to fuel strategy determined from a lookup table in its memory. This parameter changes slowly over time (at a rate slower than Short-Term Fuel Trim) and varies with engine design and engine operating conditions. The numeric character in LT FT 1 and LT FT 2 define the cylinders that are grouped as a bank for fuel feedback

correction. Bank 1 is the bank which contains cylinder number 1. Expected values for this parameter are ±10.0% (warm engine at idle).

MAF (R)

UNITS	RANGE
lb/min	0 to 86
gm/s	0 to 655

Mass Air Flow (MAF) sensor is an input to the ECU and represents the amount of air that the engine is taking into the manifold, displayed as a flow rate (pounds per minute or grams per second). MAF flow rate will increase with engine load and is typically 4-7 gm/sec at idle or 17-20 gm/sec at 2500 RPM (warm engine). Note that the (R) in parenthesis indicates the parameter is rate-related.

MAP (P)

UNITS	RANGE
kPa	0 to 255
inHg	0 to 75

Manifold Absolute Pressure (MAP) sensor is a measure of the pressure within the intake manifold relative to atmospheric pressure. Depending on MAP sensor design, a frequency or analog output signal can be generated by a MAP sensor for input to the vehicle ECU. Atmospheric pressure equals the addition of manifold and vacuum pressures. MAP pressure increases with engine load and depending on altitude is typically 40 kPa at idle (warm engine, at sea level). Note that the (P) in parenthesis indicates the parameter is pressure-related.

MIL STATUS

STATES
OFF/ON

Malfunction Indicator Lamp (MIL) Status is an indication of the current MIL state. If no emission-related faults exist, the MIL will be OFF. If a DTC is stored in the ECU due to a system fault or the vehicle is operated in a condition that causes tailpipe emissions to exceed 1.5 times the allowed value for that vehicle, the MIL will be ON. In most cases, if a hard fault exists, the MIL will remain illuminated. Also, the MIL can illuminate then extinguish while driving the vehicle (which means the vehicle exceeded tailpipe emission standards).

OBD CERT.

STATES
OBD II, OBD, OBD2/OBD, OBD I, NO OBD

On-Board Diagnostics (OBD) Certification displays the level of OBD that the vehicle ECU is certified to. The states of OBD certification can be to OBD II (California Air Resources Board) requirements, OBD (federal) requirements, OBD II and OBD requirements, OBD I requirements, or No OBD requirements. This information can be helpful when determining certification and ordering parts.

O2S B1 S1 O2S B2 S1
O2S B1 S2 O2S B2 S2
O2S B1 S3 O2S B2 S3
O2S B1 S4 O2S B2 S4

UNITS	RANGE
Volts	0 to 1.25

Oxygen Sensor (O2S) Bx Sx is the output voltage of the O2S that is input to the ECU. The O2S signal is a measure of the oxygen content in the exhaust emission gases that surround the sensor tip and is a primary input to the ECU. Once the O2S is warmed up (>500 °F), its output voltage will fluctuate above and below a threshold of 0.450 volts. Values greater than 0.450v indicate a rich condition, while values less than

0.450v indicate a lean condition. If the O2S has not achieved its normal operating temperature, its value may remain at 0.450v. Associated with the OBD II system and the parameter label are Bx and Sx. Bx refers to Bank 1 or 2 and Sx refers to the sensor in positions 1, 2, 3, or 4. Refer to Appendix B: OBD II Oxygen Sensor Location Information for a more complete description of the O2S naming convention.

ST FT 1
ST FT 2

UNITS	RANGE
%	-100 to +100

Short-Term Fuel Trim (ST FT) is the measure of adaptive or feedback fuel correction strategy for the injection of fuel into the engine. Short-Term Fuel Trim represents the ECU's dynamic short-term adjustment to fuel strategy determined from a lookup table in its memory. This parameter is continually changing over time (at a rate faster than Long-Term Fuel Trim) and varies with engine design and engine operating conditions. The numeric character in ST FT1 and ST FT 2 defines the cylinders that are grouped as a bank for fuel feedback correction. Bank 1 is the bank which contains cylinder number 1. Expected values for this parameter can be ±2.0% (warm engine at idle).

STORED DTCS

UNITS	RANGE
none	0 to 127

Stored DTCs is the number of emission-related diagnostic trouble codes (DTCs) that have been stored in the reporting ECU. (For OBD II systems, there can be multiple OBD II-compliant ECUs. Also, more than one ECU can report more than one stored DTC.) Therefore, the number of stored DTCs refers to the ECU whose data is currently being displayed. Remember also that OBD II DTCs are 5 characters and are broken into system categories:

System:	Pxxxx = Powertrain Bxxxx = Body Cxxxx = Chassis
Category:	x0100 to x0999 = SAE-defined DTCs x1000 or greater = Manufacturer-defined DTCs

TPS (%)

UNITS	RANGE
%	0 to 100

Throttle Position Sensor (TPS) is an input to the ECU and provides information about throttle plate opening. For OBD II systems, TPS voltage is converted by the ECU and displayed as a relative or absolute throttle opening value. Therefore, this indicates how much the throttle is opened off its throttle stop and not in relation to a zero voltage level. TPS percentage changes with the movement of the accelerator pedal and should display 0-20% at idle to above 80% at Wide Open Throttle.

VEHICLE SPEED

UNITS	RANGE
MPH	0 to 158
km/h	0 to 255

Vehicle Speed is an indication of vehicle speed in miles per hour or kilometers per hour. The ECU uses vehicle speed to make determinations about current engine operating conditions and the operation of various engine management system output components.

ACURA

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1. VEHICLES AND SYSTEMS

Using the **Asian Imports Cartridge**, the following Acura vehicles can be diagnosed:

MODEL:1986	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1986					
INTEGRA	1.6L I4	D16A1	MPFI	ECU LED	NONE
LEGEND	2.5L V6	C25A1	MPFI	ECU LED	NONE

MODEL: 1987	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1987					
INTEGRA	1.6L I4	D16A1	MPFI	ECU LED	NONE
LEGEND SEDAN	2.5L V6	C25A1	MPFI	ECU LED	NONE
LEGEND COUPE	2.7L V6	C27A1	MPFI	ECU LED	NONE

MODEL:1988	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1988					
INTEGRA	1.6L I4	D16A1	MPFI	ECU LED	NONE
LEGEND SEDAN	2.7L V6	C27A1	MPFI	ECU LED	NONE
LEGEND COUPE	2.7L V6	C27A1	MPFI	ECU LED	NONE

MODEL: 1989	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1989					
INTEGRA	1.6L I4	D16A1	MPFI	ECU LED	NONE
LEGEND SEDAN	2.7L V6	C27A1	MPFI	ECU LED	NONE
LEGEND COUPE	2.7L V6	C27A1	MPFI	ECU LED	NONE

MODEL: 1990	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1990					
INTEGRA	1.6L I4	B18A1	MPFI	ECU LED	NONE
LEGEND SEDAN	2.7L V6	C27A1	MPFI	ECU LED	NONE
LEGEND COUPE	2.7L V6	C27A1	MPFI	ECU LED	NONE

MODEL: 1991	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1991					
INTEGRA	1.8L I4	B18A1	MPFI	ECU LED	NONE
LEGEND SEDAN	3.2L V6	C32A1	MPFI	MIL/LED	SCC
LEGEND COUPE	3.2L V6	C32A1	MPFI	MIL/LED	SCC
NSX	3.0L V6	C30A1	MPFI	MIL/LED	SCC

MODEL: 1992	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1992					
INTEGRA	1.7L I4	B17A1	MPFI	MIL/LED	SCC
	1.8L I4	B18A1	MPFI	MIL/LED	SCC
LEGEND SEDAN	3.2L V6	C32A1	MPFI	MIL/LED	SCC
LEGEND COUPE	3.2L V6	C32A1	MPFI	MIL/LED	SCC
NSX	3.0L V6	C30A1	MPFI	MIL/LED	SCC
VIGOR	2.5L V6	G25A1	MPFI	MIL/LED	SCC

MODEL: 1993	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1993					
INTEGRA	1.7L I4	B17A1	MPFI	MIL/LED	SCC
	1.8L I4	B18A1	MPFI	MIL/LED	SCC
LEGEND SEDAN	3.2L V6	C32A1	MPFI	MIL/LED	SCC
LEGEND COUPE	3.2L V6	C32A1	MPFI	MIL/LED	SCC
NSX	3.0L V6	C30A1	MPFI	MIL/LED	SCC

MODEL: 1993 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
VIGOR	2.5L V6	G25A1	MPFI	MIL/LED	SCC

MODEL: 1994	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1994					
INTEGRA	1.7L I4	B17A1	MPFI	MIL/LED	SCC
	1.8L I4	B18A1	MPFI	MIL/LED	SCC
LEGEND SEDAN	3.2L V6	C32A1	MPFI	MIL/LED	SCC
LEGEND COUPE	3.2L V6	C32A1	MPFI	MIL/LED	SCC
NSX	3.0L V6	C30A1	MPFI	MIL/LED	SCC
VIGOR	2.5L V6	G25A1	MPFI	MIL/LED	SCC

2. ACURA SPECIFIC INFORMATION

TWO WAYS TO DIAGNOSE ACURA

Acura powertrain diagnosis can be performed with the Asian Imports cartridge installed in a Tech 1, Tech 1A, or Mastertech tester. Additionally, Acura vehicles can be diagnosed with the aftermarket version of the Acura OEM level program card software using the Mastertech tester only. Operating instructions and test mode information are available for the OEM level software in the Acura/Honda Program Card Operator's Manual.

If you do not have the necessary Program Card and Mastertech tester to perform OEM level diagnostics, you can use the Asian Imports Cartridge for reduced model year coverage. The following Acura section includes the test modes available, how to connect the tester to the vehicle, operating instructions for DTC entry, and the applicable DTCs for each model year.

3. TEST MODES AVAILABLE

The following test modes are available when testing Acura vehicles. Operating instructions for test modes other than DTC entry are included in the Common Test Modes OBD, OBD I Systems section. There are also Acura specific instructions for operating the test modes. Refer to *TEST MODES* on page 10. A description for DTCs specific to Acura is included in *ACURA DIAGNOSTIC TROUBLE CODES (DTCs)* on page 13.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

SUBMODE F2: SCC LOCATION*
SUBMODE F3: ID INFO
SUBMODE F5: ECU LOCATION*

* Note that Submodes F2 or F5 are not available on certain vehicles.

4. GETTING STARTED

Before operating the Asian Imports Cartridge with an Acura vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

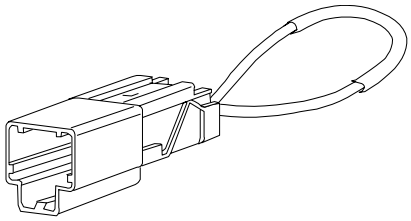
> **NOTE**
>
> Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the optional battery adapter cable.

3. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester Stand-Alone Display

4. If the display is correct, press ENTER. If the display is not correct, refer to Appendix D.
5. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.
6. When the vehicle has been selected, refer to the Acura Test Modes section for information on how to set the vehicle up for retrieving DTCs.

   On some late model Acura vehicles, the Service Check Connector (SCC) jumper (P/N 02001935) is required to retrieve DTCs. If available, use submode F2: SCC LOCATION from the Information menu to locate the service check connector.



Service Check Connector Jumper

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite the manufacturer you wish to select.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE

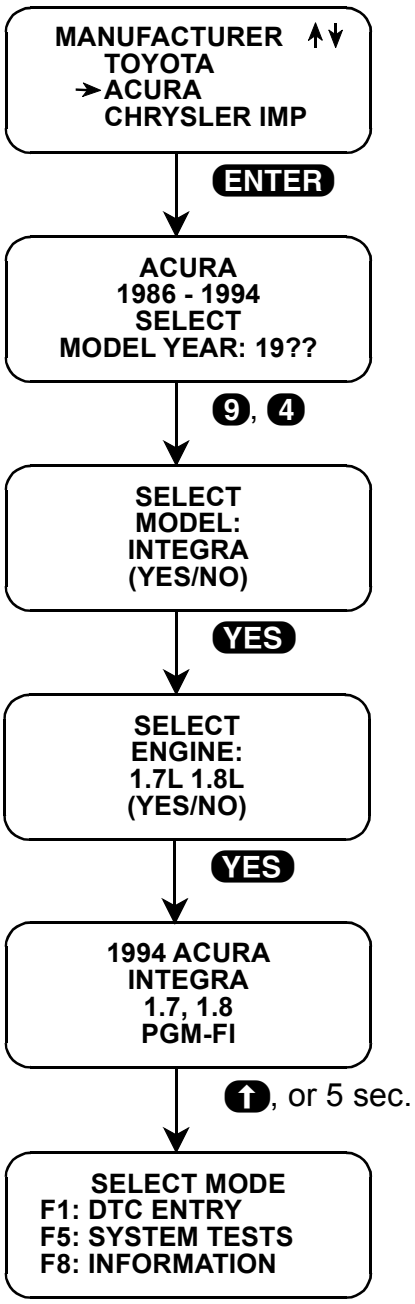
Next, the Engine Select menu is displayed. Press NO until the engine type of the vehicle is displayed, then press the YES key.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to *TEST MODES* on page 10, and the Common Test Modes OBD, OBD I Systems section for operating the test modes with Acura vehicles.



Acura Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES , NO	Used to answer questions in tester display.
ENTER	Confirm Power-up display.
EXIT	Return to previous display.

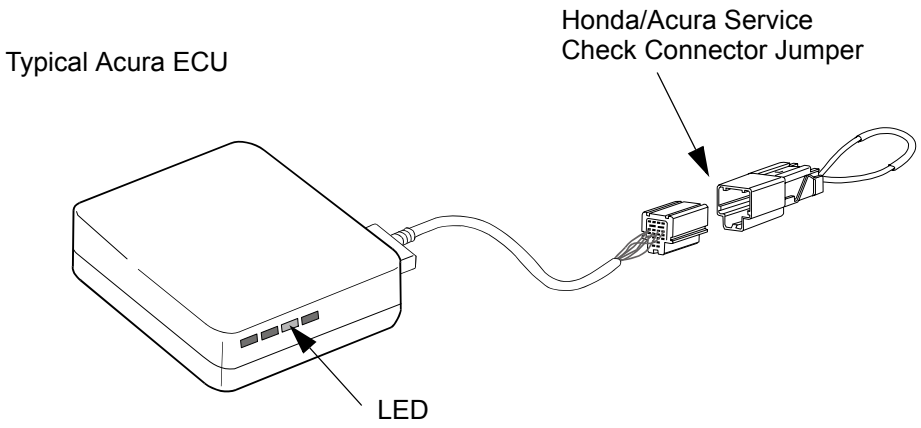
6. TEST MODES

When the Select Mode menu is displayed, test modes available for Acura vehicles may be selected. You may select Mode F1: DTC ENTRY, Mode F5: SYSTEM TESTS or Mode F8: INFORMATION without connecting the tester to the vehicle. General operating instructions for these test modes are included in the Common Test Modes OBD, OBD I Systems section. Operating instructions for Mode F1: DTC ENTRY are included in this section.

Note that early model Acura vehicles did not have a Service Check Connector (SCC). To obtain DTCs from these vehicles, it is not necessary to use the SCC jumper. The Information Mode Menu will display F5: ECU LOCATION if the SCC jumper is not required, or it will display F2: SCC LOCATION if the SCC jumper is required.

Detailed operating instructions for using Mode F1: DTC ENTRY with Acura vehicles are included in the following procedure.

When Mode F1: DTC ENTRY and F0: HOW TO READ are selected, the tester informs you if the Service Check Connector (SCC) jumper must be connected to the vehicle SCC. The location of the SCC is available by selecting Mode F2: SCC LOCATION from the Information menu. If necessary, connect the jumper to the SCC.



To read DTC codes on Acura vehicles you must locate the ECU and observe the flashing LEDs. If you are not sure where the ECU is located, select Submode F5: ECU LOCATION from the Information Mode menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to read the DTCs. Once the DTCs have been read, the tester can define the code. A complete list of Acura DTCs is also included in *ACURA DIAGNOSTIC TROUBLE CODES (DTCs)* on page 13.

MODE F1: DTC ENTRY

When Mode F1: DTC ENTRY is selected, the tester displays five submodes:

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST

F3: REVIEW DTC
F4: CLEAR DTC(s)

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the Factory Service Manual for this information, make sure that you are following the correct steps for the system that you are working on.

Submode F1: Enter DTC(s)

This submode provides you with a text description of the numeric DTC that was entered into the tester. For Acura vehicles the DTCs are entered manually after reading the single LED mounted on the ECU.

Acura service and repair information indicates that code 0 is supported for OBD systems. Code 0 refers to ECU related failures, and is valid when the engine MIL does not illuminate or will not illuminate for 2 seconds when the ignition is turned on. Refer to the service manual for the current vehicle for further explanation of code0.

The Enter DTC(s) submode displays two question marks for entering the DTC. The tester screen prompts you to enter the DTCs read off the ECU LED or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the ECU LED or MIL, then enter the DTC into the tester. Incorrect ECU LED or MIL interpretation can cause the wrong DTC description to be displayed. Refer to the following procedure for manually reading 1-LED DTCs on the ECU.

To manually read DTCs from late model Acura vehicles that use 1-LED on ECU, or 1-LED on ECU and dashboard MIL, do the following:

1. The MIL and the ECU mounted LED can be used to read DTCs from the ECU.
2. Use F2: SCC LOCATION from the Information menu for help in locating the Service Check Connector (SCC) or F5: ECU LOCATION for help in locating the engine electronic control module from the Information menu.
3. If required, connect the Honda/Acura SCC Jumper (P/N 02001935) into the Service Check Connector.
4. Turn the ignition key to run.
5. The MIL and the ECU LED will flash DTCs, if stored in ECU memory.
6. The 10's digit corresponds to a long pulse, and the 1's digit corresponds to a short pulse.
7. Use F1: ENTER DTCs and type manually read DTCs into the tester (or select the DTC from F2: DTC LIST).
8. The selected code(s) will appear on the tester, along with a brief description.
9. If used, remove the Honda/Acura SCC jumper from the Service Check Connector.
10. Use F4: CLEAR DTCs for DTC clear code information.
11. Turn ignition key off when diagnosis is finished.

NOTE

For further information, refer to the Factory Service Manual for the vehicle you are testing.

Submode F2: DTC List

This submode provides you with a text description of the numeric DTC that was selected on the tester display screen. As you scroll through the available DTCs you can select the DTC that matches the DTC output by the ECU. After you perform this step, simply select the DTC on the tester screen for later review or printing.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to choose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory of DTCs that you entered or selected in the tester.

7. ACURA DIAGNOSTIC TROUBLE CODES (DTCs)

DTCs available for Acura vehicles are listed in the following tables.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

YEAR: 1986	DTC NO.	DESCRIPTOR
1986	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE FRONT O2S OR O2S CKT FAILURE
	2	REAR 02S OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	11	IDLE MIXTURE ADJ SENSOR/CKT FAIL
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL SENSOR

YEAR: 1987	DTC NO.	DESCRIPTOR
1987	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE FRONT O2S OR O2S CKT FAILURE
	2	FAULTY ECU OR ECU CKT FAILURE REAR O2S OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	FAULTY ECU OR ECU CKT FAILURE
	5	MAP SENSOR OR MAP CKT FAILURE

YEAR: 1987 (CONTINUED)	DTC NO.	DESCRIPTOR
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	11	FAULTY ECU OR ECU CKT FAILURE IDLE MIXTURE ADJ SENSOR/CKT FAIL
	12	FAULTY ECU OR ECU CKT FAILURE EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL SENSOR
	15	FAULTY ECU OR ECU CKT FAILURE IGNITION OUTPUT SIG. OR CKT FAIL
	17	VSS OR VSS CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT
	19	FAULTY ECU OR ECU CKT FAILURE

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE
	1	FRONT O2S OR O2S CKT FAILURE
	2	FAULTY ECU OR ECU CKT FAILURE
	2	REAR O2S OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	FAULTY ECU OR ECU CKT FAILURE CK ANGLE OR CK ANG. CKT FAILURE
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE

YEAR: 1988 (CONTINUED)	DTC NO.	DESCRIPTOR
	11	FAULTY ECU OR ECU CKT FAILURE
	12	FAULTY ECU OR ECU CKT FAILURE EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL SENSOR
	15	FAULTY ECU OR ECU CKT FAILURE IGNITION OUTPUT SIG. OR CKT FAIL
	17	VSS OR VSS CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT
	19	FAULTY ECU OR ECU CKT FAILURE

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR 02S CKT FAILURE FRONT O2S OR O2S CKT FAILURE
	2	REAR O2S OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CK ANGLE OR CK ANG. CKT FAILURE
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL SENSOR
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT

YEAR: 1989 (CONTINUED)	DTC NO.	DESCRIPTOR
	19	LOCK-UP CONTROL SOL. VALVE FAIL FAULTY ECU OR ECU CKT FAILURE
	20	ELECTRIC LOAD SENSOR FAILURE
	21	FAULTY ECU OR ECU CKT FAILURE

YEAR: 1990	DTC NO.	DESCRIPTOR
1990	0	0 FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE FRONT O2S OR O2S CKT FAILURE
	2	FAULTY ECU OR ECU CKT FAILURE REAR O2S OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	FAULTY ECU OR ECU CKT FAILURE CK ANGLE OR CK ANG. CKT FAILURE
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL SENSOR
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT
	19	FAULTY ECU OR ECU CKT FAILURE
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	43	FUEL SUPPLY SYSTEM

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE LEFT O2S OR O2S CKT FAILURE FRONT O2S OR O2S CKT FAILURE
	2	RIGHT O2S OR O2S CKT FAILURE REAR O2S OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CK ANGLE OR CK ANG. CKT FAILURE CRANK ANGLE SENSOR NO.1 CRANK ANGLE SENSOR A
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL) CRANK ANGLE SENSOR - (CYL/A)
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC AIR CONTROL SENSOR
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT
	23	LEFT KS OR KS CIRCUIT FAILURE
	23	FRONT KS OR KS CIRCUIT FAILURE
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	35	TC STB SIGNAL
	36	TCFC SIGNAL
	41	LEFT O2S HEATER OR CKT FAILURE FRONT O2S HEATER OR CKT FAILURE
	42	RIGHT O2S HEATER OR CKT FAILURE REAR O2S HEATER OR CKT FAILURE

YEAR: 1991 (CONTINUED)	DTC NO.	DESCRIPTOR
	43	FUEL SUPPLY SYSTEM LEFT FUEL SUPPLY SYSTEM FRONT FUEL SUPPLY SYSTEM
	44	RIGHT FUEL SUPPLY SYSTEM REAR FUEL SUPPLY SYSTEM
	45	LEFT FUEL SUPPLY METERING FRONT FUEL SUPPLY METERING
	46	RIGHT FUEL SUPPLY METERING REAR FUEL SUPPLY METERING
	47	FAULTY FUEL PUMP OR CKT FAILURE
	51	REAR SPOOL SOLENOID VALVE
	53	RIGHT KS OR KS CIRCUIT FAILURE REAR KS OR KS CIRCUIT FAILURE
	54	CRANK ANGLE SENSOR 2 CRANK ANGLE SENSOR B
	59	CRANK ANGLE SENSOR - (CYL/2) CRANK ANGLE SENSOR - (CYL/B)

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE LEFT O2S OR O2S CKT FAILURE FRONT O2S OR O2S CKT FAILURE
	2	RIGHT O2S OR O2S CKT FAILURE REAR O2S OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CK ANGLE OR CK ANG. CKT FAILURE CRANK ANGLE SENSOR NO.1 CK ANGLE OR CK ANG. CKT FAILURE CRANK ANGLE SENSOR A
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL) CRANK ANGLE SENSOR - (CYL/1) CRANK ANGLE SENSOR - (CYL/A)

YEAR: 1992 (CONTINUED)	DTC NO.	DESCRIPTOR
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC AIR CONTROL SENSOR
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT
	20	ELECTRIC LOAD DETECTOR
	21	SPOOL SOLENOID VALVE (1.7L) FRONT SPOOL SOLENOID VALVE
	22	VALVE TIMING OIL PRESS. SW (1.7L) FRT VALVE TIMING OIL PRESSURE SW.
	23	KS (1.7L) OR KS CIRCUIT FAILURE LEFT KS OR KS CIRCUIT FAILURE KS OR KS CIRCUIT FAILURE FRONT KS OR KS CIRCUIT FAILURE
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	35	TC STB SIGNAL
	36	TCFC SIGNAL
	41	O2S HEATER OR CIRCUIT FAILURE LEFT O2S HEATER OR CKT FAILURE FRONT O2S HEATER OR CKT FAILURE
	42	RIGHT O2S HEATER OR CKT FAILURE REAR O2S HEATER OR CKT FAILURE
	43	FUEL SUPPLY SYSTEM LEFT FUEL SUPPLY SYSTEM FRONT FUEL SUPPLY SYSTEM
	44	RIGHT FUEL SUPPLY SYSTEM REAR FUEL SUPPLY SYSTEM
	45	LEFT FUEL SUPPLY METERING FUEL SUPPLY METERING FRONT FUEL SUPPLY METERING
	46	RIGHT FUEL SUPPLY METERING REAR FUEL SUPPLY METERING
	47	FAULTY FUEL PUMP OR CKT FAILURE
	51	REAR SPOOL SOLENOID VALVE

YEAR: 1992 (CONTINUED)	DTC NO.	DESCRIPTOR
	52	RR VALVE TIMING OIL PRESSURE SW.
	53	RIGHT KS OR KS CIRCUIT FAILURE KS OR KS CIRCUIT FAILURE REAR KS OR KS CIRCUIT FAILURE
	54	CRANK ANGLE SENSOR 2 CRANK ANGLE SENSOR B
	59	CRANK ANGLE SENSOR - (CYL/2) CRANK ANGLE SENSOR - (CYL/B)

YEAR: 1993	DTC NO.	DESCRIPTOR
1993	0	FAULTY ECU OR ECU CKT FAILURE
	1	HEATED O2S OR HO2S CKT FAILURE FRONT HO2S OR CIRCUIT FAILURE
	2	REAR HO2S OR CIRCUIT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CK ANGLE OR CK ANG. CKT FAILURE CRANK ANGLE SENSOR NO.1 CRANK ANGLE SENSOR A
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CKT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL) CRANK ANGLE SENSOR NO. 1 CRANK ANGLE SENSOR - (CYL/A)
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM (1.8L A/T) EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	IDLE AIR CONTROL VALVE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT
	20	ELECTRIC LOAD DETECTOR

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	21	SPOOL SOLENOID VALVE (1.7L) FRONT VTEC SOLENOID VALVE
	22	VALVE TIMING OIL PRESS. SW (1.7L) FRONT VTEC PRESSURE SWITCH
	23	KS (1.7L) OR KS CIRCUIT FAILURE LEFT KS OR KS CIRCUIT FAILURE KNOCK SENSOR NO.1 FRONT KS OR KS CIRCUIT FAILURE
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	35	TC STB SIGNAL
	36	TCFC SIGNAL
	41	HO2S HEATER OR CIRCUIT FAILURE LEFT HO2S HEATER OR CKT FAILURE FRNT HO2S HEATER OR CKT FAILURE
	42	RT HO2S HEATER OR CKT FAILURE REAR HO2S HEATER OR CKT FAILURE
	43	FUEL SUPPLY SYSTEM LEFT FUEL SUPPLY SYSTEM FRONT FUEL SUPPLY SYSTEM
	44	RIGHT FUEL SUPPLY SYSTEM REAR FUEL SUPPLY SYSTEM
	45	LEFT FUEL SUPPLY METERING FUEL SUPPLY METERING FRONT FUEL SUPPLY METERING
	46	RIGHT FUEL SUPPLY METERING REAR FUEL SUPPLY METERING
	47	FAULTY FUEL PUMP OR CKT FAILURE
	51	REAR VTEC SOLENOID VALVE
	52	REAR VTEC PRESSURE SWITCH
	53	RIGHT KS OR KS CIRCUIT FAILURE KNOCK SENSOR NO.2 REAR KS OR KS CIRCUIT FAILURE
	54	CRANK ANGLE SENSOR 2 CRANK ANGLE SENSOR B
	59	CRANK ANGLE SENSOR - (CYL/2) CRANK ANGLE SENSOR - (CYL/B)

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	0	FAULTY ECM OR ECM CIRCUIT FAILURE
	1	HEATED O2 SENSOR OR CIRCUIT FAILURE (INTEGRA, VIGOR)
	1	LEFT HO2 SENSOR OR CIRCUIT FAILURE (LEGEND)
	1	FRONT HO2 SENSOR OR CIRCUIT FAILURE (NSX)
	2	RIGHT HO2 SENSOR OR CIRCUIT FAILURE (LEGEND)
	2	REAR HO2 SENSOR OR CIRCUIT FAILURE (NSX)
	3	MAP SENSOR OR MAP CIRCUIT FAILURE
	4	CRANK ANGLE OR CIRCUIT FAILURE (INTEGRA, VIGOR)
	4	CRANK ANGLE SENSOR NO. 1 (LEGEND)
	4	CRANK ANGLE SENSOR A (NSX)
	5	MAP SENSOR OR MAP CIRCUIT FAILURE
	6	ECT SENSOR OR ECT CIRCUIT FAILURE
	7	TP SENSOR OR CIRCUIT FAILURE
	8	CRANK ANGLE SENSOR-TDC
	9	CRANK ANGLE SENSOR NO. 1 (INTEGRA, VIGOR)
	9	CRANK ANGLE SENSOR-CYL. 1 (LEGEND)
	9	CRANK ANGLE SENSOR-CYL. A (NSX)
	10	IAT SENSOR OR CIRCUIT FAILURE
	12	EGR SYSTEM OR CIRCUIT FAILURE (LEGEND, NSX)
	12	EGR SYSTEM OR CIRCUIT FAILURE (VIGOR)
	13	BARO SENSOR OR CIRCUIT FAILURE
	14	IDLE AIR CONTROL VALVE
	15	IGNITION OUTPUT SIGNAL OR CIRCIT FAILURE
	16	FUEL INJECTOR FAILURE
	17	VSS OR CIRCUIT FAILURE
	18	IGNITION TIMING CONTROL UNIT
	20	ELECTRIC LOAD DETECTOR
	21	VTEC SOLENOID VALVE (INTEGRA)
	21	FRONT VTEC SOLENOID VALVE (NSX)
	22	VTEC PRESSURE SWITCH (INTEGRA)
	22	FRONT VTEC PRESSURE SWITCH (NSX)

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	23	KNOCK SENSOR OR CIRCUIT FAILURE, B18C1 ENGINE (INTEGRA)
	23	LEFT KNOCK SENSOR OR CIRCUIT FAILURE (LEGEND)
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	35	TC STB SIGNAL (LEGEND GS MODEL)
	35	TC STB SIGNAL TCFC SIGNAL (NSX)
	36	TCFC SIGNAL (LEGEND GS MODEL)
	36	TCFC SIGNAL (NSX)
	41	HO2 SENSOR HEATER OR CIRCUIT FAILURE (INTEGRA, VIGOR)
	41	LEFT HO2 SENSOR HEATER OR CIRCUIT FAILURE (LEGEND)
	41	FRONT HO2 SENSOR HEATER OR CIRCUIT FAILURE (NSX)
	42	FIGHT HO2 SENSOR HEATER OR CIRCUIT FAILURE (LEGEND)
	42	REAR HO2 SENSOR HEATER OR CIRCUIT FAILURE (NSX)
	43	FUEL SUPPLY SYSTEM (INTEGRA, VIGOR)
	43	LEFT FUEL SUPPLY SYSTEM (LEGEND)
	43	FRONT FUEL SUPPLY SYSTEM (NSX)
	44	RIGHT FUEL SUPPLY SYSTEM (LEGEND)
	44	REAR FUEL SUPPLY SYSTEM (NSX)
	45	LEFT FUEL SUPPLY METERING (LEGEND)
	45	FRONT FUEL SUPPLY METERING (NSX)
	45	FUEL SUPPLY METERING (VIGOR)
	46	RIGHT FUEL SUPPLY METERING (LEGEND)
	46	REAR FUEL SUPPLY METERING (NSX)
	47	FAULTY FUEL PUMP OR CIRCUIT FAILURE
	51	REAR VTEC SOLENOID VALVE
	52	REAR VTEC PRESSURE SWITCH
	53	RIGHT KNOCK SENSOR OR CIRCUIT FAILURE (LEGEND)
	53	REAR KNOCK SENSOR OR CIRCUIT FAILURE (NSX, VIGOR)
	54	CRANK ANGLE SENSOR 2 (LEGEND)
	54	CRANK ANGLE SENSOR B (NSX)
	59	CRANK ANGLE SENSOR-CYL. 2 (LEGEND)
	59	CRANK ANGLE SENSOR-CYL. B (NSX)

CHRYSLER IMPORTS

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1. VEHICLES AND SYSTEMS

Using the Asian cartridge, the following Chrysler Imports vehicles can be diagnosed.

MODEL: 1984	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1984					
COLT	1.6L I4 SOHC TUR	G32B	ECI EFI	NONE	MANCODES

MODEL: 1985	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1985					
COLT	1.6L I4 SOHC TUR	G32B	ECI EFI	NONE	MANCODES
CONQUEST	2.6L I4 SOHC TUR	G54B	ECI EFI	NONE	MANCODES

MODEL: 1986	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1986					
COLT	1.6L I4 SOHC TUR	G32B	ECI EFI	NONE	MANCODES
CONQUEST	2.6L I4 SOHC TUR	G54B	ECI EFI	NONE	MANCODES
CONQUEST	2.6L I4 TUR INT	G54B	ECI EFI	NONE	MANCODES

MODEL: 1987	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1987					
COLT	1.6L I4 SOHC TUR	G32B	ECI EFI	NONE	MANCODES
COLT VISTA	2.0L I4 SOHC	G63B	MPI	CHECK	AUTOCODES
CONQUEST	2.6L I4 SOHC TUR	G54B	ECI EFI	CHECK	AUTOCODES
CONQUEST	2.6L I4 TUR INT	G54B	ECI EFI	CHECK	AUTOCODES

MODEL: 1988	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1988					
COLT	1.5L	4G15	MPI	CHECK	AUTOCODES
COLT	1.6L TURBO	G32B	MPI	CHECK	AUTOCODES
COLT	1.6L TURBO	G32B	ECI	NONE	AUTOCODES
COLT VISTA	2.0L I4 SOHC	G63B	MPI	CHECK	AUTOCODES
CONQUEST	2.6L I4 TUR INT	G54B	ECI EFI	CHECK	AUTOCODES

MODEL: 1989	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1989					
COLT	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
COLT	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
COLT	1.6L I4 DOHC TUR	4G61	MPI	CHECK	AUTOCODES
COLT 2000	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
COLT 2000	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
COLT 2000	1.6L I4 DOHC TUR	4G61	MPI	CHECK	AUTOCODES
COLT VISTA	2.0L I4 SOHC	G63B	MPI	CHECK	AUTOCODES
COLT WAGON	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
COLT WAGON	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
CONQUEST	2.6L I4 SOHC TUR	G54B	ECI EFI	CHECK	AUTOCODES
RAM RAIDER	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES
SUMMIT	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
SUMMIT	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
VISTA WAGON	2.0L I4 SOHC	G63B	MPI	CHECK	AUTOCODES

MODEL: 1990	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1990					
COLT	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
COLT	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES

MODEL: 1990 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
COLT 200	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
COLT 200	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
COLT VISTA	2.0L I4 SOHC	G63B	MPI	CHECK	AUTOCODES
COLT WAGON	1.5L I4 SOHC	G15	MPI	CHECK	AUTOCODES
COLT WAGON	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
LASER	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
POWER RAM 50	2.4L I4	4G64	MPI	CHECK	AUTOCODES
POWER RAM 50	3.0L V6	6G72	MPI	CHECK	AUTOCODES
RAM 50	2.4L I4	4G64	MPI	CHECK	AUTOCODES
RAM 50	3.0L V6	6G72	MPI	CHECK	AUTOCODES
SUMMIT	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
SUMMIT	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
TALON	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC TUR	G63	MPI	CHECK	AUTOCODES
VISTA WAGON	2.0L I4 SOHC	G63B	MPI	CHECK	AUTOCODES

MODEL: 1991	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1991					
COLT	1.5L I4 SOHC	4G61	MPI	CHECK	AUTOCODES
COLT 200	1.5L I4 SOHC	4G61	MPI	CHECK	AUTOCODES
COLT VISTA	2.0L I4 SOHC	G63B	MPI	CHECK	AUTOCODES
LASER	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
POWER RAM 50	2.4L I4	4G64	MPI	CHECK	AUTOCODES
POWER RAM 50	3.0L V6	6G72	MPI	CHECK	AUTOCODES
RAM 50	2.4L I4	4G64	MPI	CHECK	AUTOCODES
STEALTH	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES

MODEL: 1991 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
STEALTH	3.0L V6 DOHC TUR	6G72	MPI	CHECK	AUTOCODES
STEALTH	3.0L V6 SOHC	6G72	MPI	CHECK	AUTOCODES
SUMMIT	1.5L I4 SOHC	4G61	MPI	CHECK	AUTOCODES
TALON	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES

MODEL: 1992	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1992					
COLT	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
COLT 200	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
COLT VISTA	1.8L I4 SOHC	4G93	MPI	CHECK	AUTOCODES
COLT VISTA	2.4L I4 SOHC	4G64	MPI	CHECK	AUTOCODES
LASER	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
POWER RAM 50	2.4L I4	4G64	MPI	CHECK	AUTOCODES
POWER RAM 50	3.0L V6	6G72	MPI	CHECK	AUTOCODES
RAM 50	2.4L I4	4G64	MPI	CHECK	AUTOCODES
STEALTH	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES
STEALTH	3.0L V6 DOHC TUR	6G72	MPI	CHECK	AUTOCODES
STEALTH	3.0L V6 SOHC	6G72	MPI	CHECK	AUTOCODES
SUMMIT	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
SUMMIT WAGON	1.8L I4 SOHC	4G93	MPI	CHECK	AUTOCODES
SUMMIT WAGON	2.4L I4 SOHC	4G64	MPI	CHECK	AUTOCODES
TALON	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES

MODEL: 1993	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1993					
COLT	1.5L I4 SOHC	4G15	MFI	CHECK	AUTOCODES
COLT	1.8L I4 SOHC	4G93	MFI	CHECK	AUTOCODES
COLT VISTA	1.8L I4 SOHC	4G93	MFI	CHECK	AUTOCODES
COLT VISTA	2.4L I4 SOHC	4G64	MFI	CHECK	AUTOCODES
LASER	1.8L I4 SOHC	4G37	MFI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC	4G63	MFI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC TUR	4G63	MFI	CHECK	AUTOCODES
POWER RAM 50	2.4L I4 SOHC	4G64	MFI	CHECK	AUTOCODES
POWER RAM 50	3.0L V6 DOHC	6G72	MFI	CHECK	AUTOCODES
RAM 50	2.4L I4 SOHC	4G64	MFI	CHECK	AUTOCODES
STEALTH	3.0L V6 DOHC	6G72	MFI	CHECK	AUTOCODES
STEALTH	3.0L V6 DOHC TUR	6G72	MFI	CHECK	AUTOCODES
STEALTH	3.0L V6 SOHC	6G72	MFI	CHECK	AUTOCODES
SUMMIT	1.5L I4 SOHC	4G15	MFI	CHECK	AUTOCODES
SUMMIT	1.8L I4 SOHC	4G93	MFI	CHECK	AUTOCODES
SUMMIT WAGON	1.8L I4 SOHC	4G93	MFI	CHECK	AUTOCODES
SUMMIT WAGON	2.4L I4 SOHC	4G64	MFI	CHECK	AUTOCODES
TALON	1.8L I4 SOHC	4G37	MFI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC	4G63	MFI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC TUR	4G63	MFI	CHECK	AUTOCODES

MODEL: 1994	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1994					
COLT	1.5L I4 SOHC	4G15	MFI	NONE	MANCODES
COLT	1.8L I4 SOHC	4G93	MFI	JUMPER	MILCODES
COLT VISTA	1.8L I4 SOHC	4G93	MFI	JUMPER	MILCODES
COLT VISTA	2.4L I4 SOHC	4G64	MFI	JUMPER	MILCODES
LASER	1.8L I4 SOHC	4G37	MFI	CHECK	AUTOCODES
LASER	2.0L I4 DOHC	4G63	MFI	CHECK	AUTOCODES

MODEL: 1994 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
LASER	2.0L I4 DOHC TUR	4G63	MFI	CHECK	AUTOCODES
STEALTH	3.0L V6 DOHC	6G72	MFI	JUMPER	MILCODES
STEALTH	3.0L V6 DOHC TUR	6G72	MFI	JUMPER	MILCODES
STEALTH	3.0L V6 SOHC	6G72	MFI	JUMPER	MILCODES
SUMMIT	1.5L I4 SOHC	4G15	MFI	NONE	MANCODES
SUMMIT	1.8L I4 SOHC	4G93	MFI	JUMPER	MILCODES
SUMMIT WAGON	1.8L I4 SOHC	4G93	MFI	JUMPER	MILCODES
SUMMIT WAGON	2.4L I4 SOHC	4G64	MFI	JUMPER	MILCODES
TALON	1.8L I4 SOHC	4G37	MFI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC	4G63	MFI	CHECK	AUTOCODES
TALON	2.0L I4 DOHC TUR	4G63	MFI	CHECK	AUTOCODES

MODEL: 1995	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1995					
AVENGER	2.0L I4 DOHC	420A	MFI	NONE	MILCODES
AVENGER	2.5L V6 SOHC	6G73	MFI	JUMPER	MILCODES
COLT	1.5L I4 SOHC	4G15	MFI	JUMPER	MILCODES
COLT	1.8L I4 SOHC	4G93	MFI	JUMPER	MILCODES
COLT VISTA	1.8L I4 SOHC	4G93	MFI	JUMPER	MILCODES
COLT VISTA	2.4L I4 SOHC	4G64	MFI	JUMPER	MILCODES
SEBRING	2.0L I4 DOHC	420A	MFI	JUMPER	MILCODES
SEBRING	2.5L V6 SOHC	6G73	MFI	NONE	MILCODES
STEALTH	3.0L V6 DOHC	6G72	MFI	JUMPER	MILCODES
STEALTH	3.0L V6 DOHC TUR	6G72	MFI	JUMPER	MILCODES
STEALTH	3.0L V6 SOHC	6G72	MFI	JUMPER	MILCODES
SUMMIT	1.5L I4 SOHC	4G93	MFI	JUMPER	MILCODES
SUMMIT	1.8L I4 SOHC	4G93	MFI	JUMPER	MILCODES
SUMMIT WAGON	1.8L I4 SOHC	4G64	MFI	JUMPER	MILCODES
TALON	1.8L I4 SOHC	4G37	MFI	CHECK	AUTOCODES
TALON	2.0L 14 DOHC	4G63	MFI	CHECK	AUTOCODES

MODEL: 1995 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
TALON	2.0L I4 DOHC TUR	4G63	MFI	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL: 1996	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1996					
AVENGER	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
AVENGER	2.5L V6 SOHC	6G73	MFI	OBD II*	AUTOCODES
COLT	1.5L I4 SOHC	4G15	MFI	OBD II*	AUTOCODES
COLT	1.8L I4 SOHC	4G93	MFI	OBD II*	AUTOCODES
COLT WAGON	1.8L I4 SOHC	4G93	MFI	OBD II*	AUTOCODES
COLT WAGON	2.4L I4 SOHC	4G64	MFI	OBD II*	AUTOCODES
SEBRING	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
SEBRING	2.5L V6 SOHC	6G73	MFI	OBD II*	AUTOCODES
STEALTH	3.0L V6 DOHC TUR	6G72	MFI	OBD II*	AUTOCODES
STEALTH	3.0L V6 DOHC	6G72	MFI	OBD II*	AUTOCODES
STEALTH	3.0L V6 SOHC	6G72	MFI	OBD II*	AUTOCODES
SUMMIT	1.5L I4 SOHC	4G93	MFI	OBD II*	AUTOCODES
SUMMIT	1.8L I4 SOHC	4G93	MFI	OBD II*	AUTOCODES
SUMMIT WAGON	1.8L I4 SOHC	4G64	MFI	OBD II*	AUTOCODES
SUMMIT WAGON	2.4L I4 SOHC	4G64	MFI	OBD II*	AUTOCODES
TALON	2.0L I4 SOHC	4G63	MFI	OBD II*	AUTOCODES
TALON	2.0L I4 SOHC TUR	4G63	MFI	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL: 1997	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1997					
AVENGER	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
AVENGER	2.5L V6 SOHC	4G73	MFI	OBD II*	AUTOCODES
SEBRING	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES

MODEL: 1997 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
SEBRING	2.5L V6 SOHC	4G73	MFI	OBD II*	AUTOCODES
TALON	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
TALON	2.0L I4 DOHC TUR	4G63	MFI	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL: 1998	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1998					
AVENGER	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
AVENGER	2.5L V6 SOHC	4G73	MFI	OBD II*	AUTOCODES
SEBRING	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
SEBRING	2.5L V6 SOHC	4G73	MFI	OBD II*	AUTOCODES
TALON	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
TALON	2.0L I4 DOHC TUR	4G63	MFI	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

2. CHRYSLER IMPORTS SPECIFIC INFORMATION

The Chrysler Imports vehicles covered by the Asian Imports Cartridge are separated into two different sections within the Asian Imports Operator's Manual. The vehicle's on-board system will determine which section of the Operator's Manual will need to be used. Vehicles that are OBD II certified have information about the operating test modes in the Common Test Modes OBD II Systems section of the Operator's Manual. Vehicles that have OBD or OBDI systems have test mode information in this section of the Operator's Manual. In these sections, you will find operating instructions, how to connect the tester to the vehicle, and test mode information. A complete list of Chrysler Imports Diagnostic Trouble Codes is included at the back of each section.

To determine which section of the Operator's Manual to use for diagnostic information and instructions, look at Adapter Type of the Vehicles and Systems chart. If the vehicle you are testing has an OBD II adapter type, use the Common Test Modes OBD II Systems section of the Operator's Manual. If the vehicle you are testing does not have the OBD II Adapter Type, use this section to diagnose the vehicle under test.

3. TEST MODES AVAILABLE

The following test modes are available when testing Chrysler Imports vehicles that have OBD or OBD I systems. Operating instructions for test modes other than F1: DTC Entry and F2: DTCs are included in the Common Test Modes OBD, OBD I Systems section. There are specific instructions for operating the test modes. Refer to *TEST MODES* on page 16.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F2: DTC

SUBMODE F1: READ DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

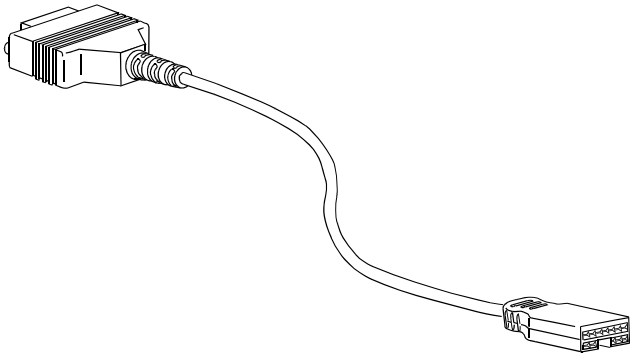
SUBMODE F1: DLC LOCATION*
SUBMODE F3: ID INFO
SUBMODE F4: DJC LOCATION*

* Note that not all models support DJC, or DLC Location Test modes. The tester will automatically choose which test mode to display, depending on your vehicle selection.

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Chrysler Imports vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Refer to the chart in Section 1 to see if the vehicle you are testing requires the Check Adapter Cable. If so, connect the Chrysler Imports Check Adapter Cable to the end of the DLC cable, then connect the yellow connector end to the vehicle Check connector.



CHRYSLER IMPORTS CHECK ADAPTER CABLE

3. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery clip adapter (P/N 02001636).

NOTE

Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery clip adapter.

4. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester stand-alone display

5. If the display is correct, press **ENTER**. If the display is not correct, refer to Appendix D.
6. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite CHRY IMPORTS.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE AND ENGINE TYPE

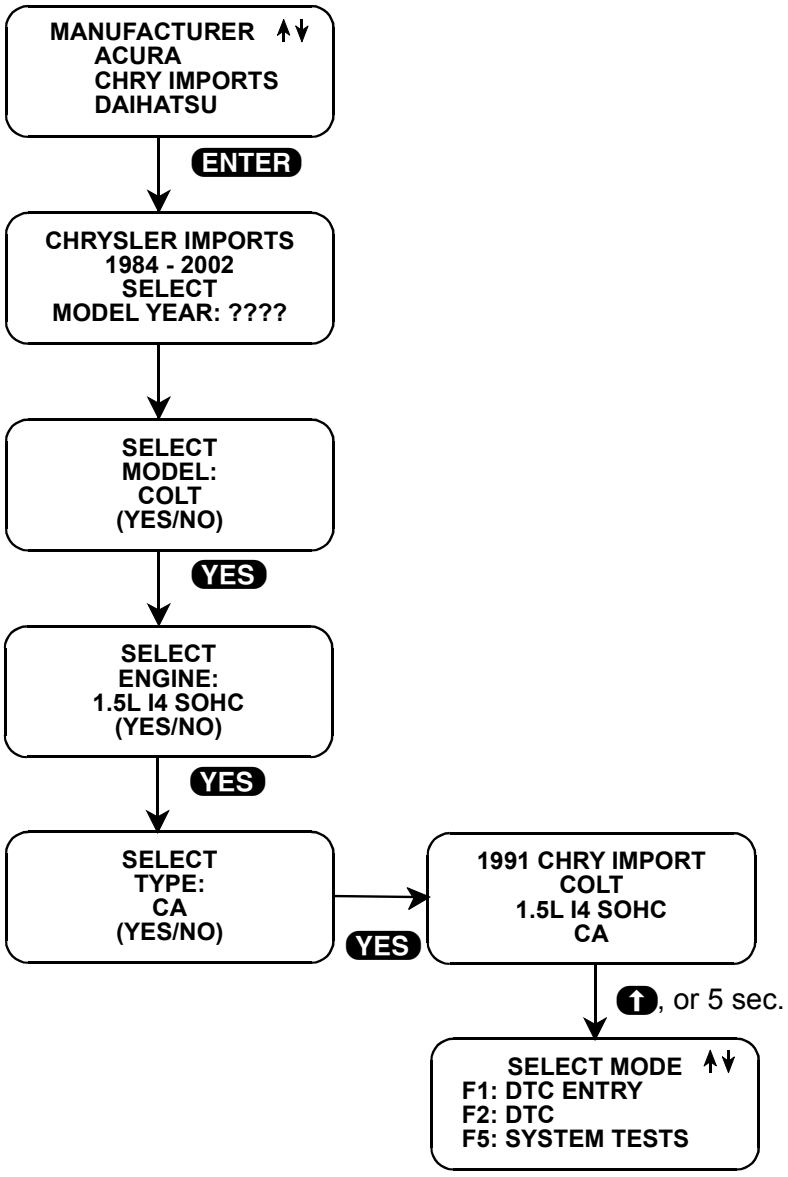
Next, the Engine Select menu is displayed. Press NO until the engine and engine type of the vehicle is displayed, then press YES. For some vehicles, you will also be asked to select the emissions type (CA or FED) and/or the drive type (AWD or FWD).

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to Section 6 (Test Modes), and the Common Test Modes OBD, OBDI Systems sections for instructions on operating the test modes with Chrysler Imports vehicles.



CHRYSLER IMPORTS VEHICLE SELECTION

ACTIVE KEYS	
0 - 9	Enter model year.
YES , NO	Used to answer questions in tester display.
EXIT	Return to previous display.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Chrysler Imports vehicles may be selected.

How to select Modes F1: DTC Entry, F2: DTC, F4: DJC Location, and F1: DLC Location are included in the Common Test Modes OBD, OBD I Systems section. You may select Mode F4: DJC Location or F1: DLC Location from the Information menu without connecting the tester to the vehicle.

READING CODES

Detailed operating instructions for using Modes F1: DTC Entry and F2: DTC with Chrysler Imports vehicles are included in the following procedure. F1: DTC Entry is automatically displayed, and F2: DTC is automatically displayed with Chrysler Imports vehicles that have “CHECK” as the adapter type listed in Section 1.

NOTE	
	Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

MODE F1: DTC ENTRY

When Mode F1: DTC Entry is selected, the tester displays submodes which, after your selection, can provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory buffer), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

DTC Entry Submodes

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Manually Reading DTCs

To manually read Diagnostic Trouble Codes (DTCs) on Chrysler Import vehicles from 1984-95, there are 2 methods that can be used. The most common method requires an analog voltmeter. Using the analog voltmeter set to a 20 volt scale and connected to the Data Link Connector (DLC), the DTC can be interpreted from the analog voltmeter needle flashes. The second method requires the 16 pin Mitsubishi/ Chrysler Imports jumper (P/N 02002095) which connects 2 pins of the 16 pin DLC. In a similar fashion, the DTCs are instead flashed out on the instrument panel mounted Malfunction Indicator Lamp (MIL).

For the automobile manufacturers that mention the use of an analog voltmeter to read manual DTCs, the Mastertech Oscilloscope may be used. Set up the single channel oscilloscope and make connections the same way as the analog voltmeter (above). Choose the 20v/division scale and a slow time/division (e.g., 1-2 sec/division)—the DTCs will be shown as a waveform on the display.

Note that manually retrieving DTCs from select 1995 Chrysler Import vehicles requires you to locate and jumper the 16 pin Diagnostic Connector. The vehicles that require the use of a jumper are noted in the column “Adapter Type” in the Chrysler Import coverage table (found at the beginning of this section). Refer to the section on manually reading DTCs from the 1995 Chrysler Import vehicles in this section.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the ECU, the tester can define the code. A complete list of Chrysler Imports DTCs is also included in *CHRYSLER IMPORTS DIAGNOSTIC TROUBLE CODES (DTCs)* on page 24.

Submode F0: How To Read

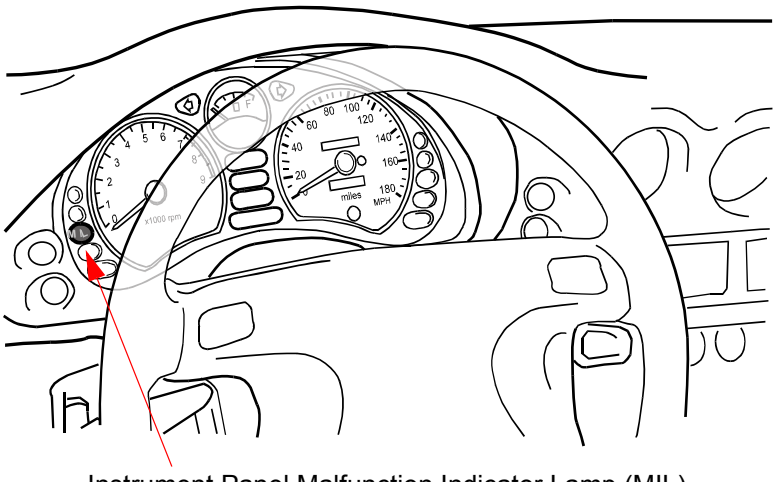
This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the manual for this information, make sure that you are following the correct steps for the system that you are working on.

On Chrysler Imports vehicles, the Enter DTCs submode allows you to enter manually read DTCs. This submode provides you with a text description of the numeric DTC that was entered into the tester.

Submode F1: Enter DTC(s)

The Enter DTC Submode displays two question marks for DTC Entry. The tester screen prompts you to enter the DTCs read from the analog voltmeter or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the analog voltmeter or MIL. Incorrect analog voltmeter or MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section. Refer to the appropriate procedure for manually reading analog voltmeter or MIL DTCs on the following pages.

Chrysler Imports service and repair information indicates that code 0 is supported for OBD systems. Code 0 refers to ECU related failures, and is valid when the engine MIL does not illuminate or will not illuminate for 2 seconds when the ignition is turned on. Refer to the service manual for the current vehicle for further explanation of code 0.



Instrument Panel Malfunction Indicator Lamp (MIL)

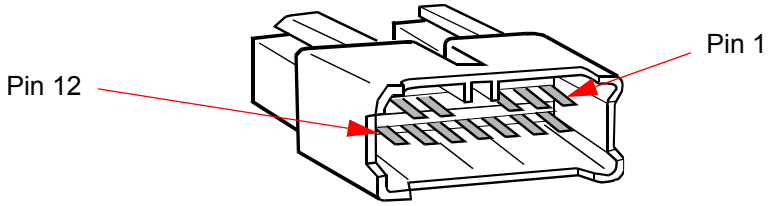
To manually read DTCs from models that use 12 pin, 12 pin and 16 pin DLC and analog voltmeter, do the following:

The DLC type is vehicle dependent; refer to the information displayed on the tester F0: HOW TO READ for the DLC type.

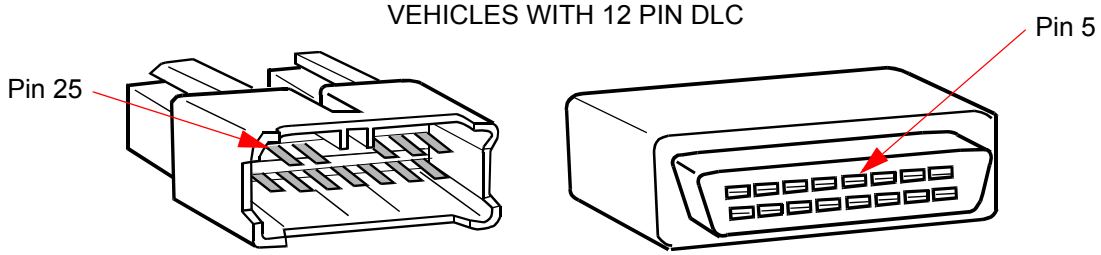
1. Locate the 12 pin or 12 pin and 16 pin Diagnostic Connector. Use F4: DJC Location from the Information menu for diagnostic connector location.

2a. **12 pin DLC only:** Connect analog voltmeter red lead to pin 1 terminal and voltmeter black lead to pin 12 (ground) terminal of diagnosis connector.

2b. **12 pin and 16 pin DLC only:** Connect analog voltmeter red lead to pin 25 of 12 pin DLC and black lead to pin 5 of 16 pin DLC.



VEHICLES WITH 12 PIN DLC

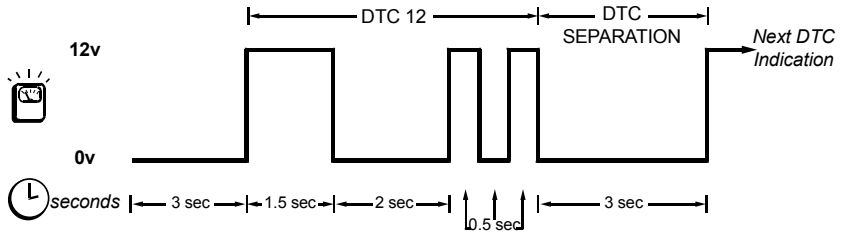


VEHICLES WITH 12 PIN AND 16 PIN DLC

3. Turn ignition switch to ON.

4. DTC indication will begin on voltmeter.

   Voltmeter will fluctuate 0 to 12 volts if DTCs are stored in ECU. If a DTC is stored in ECU, the first number of 12 volt, 1.5 second indications will equal the 10's digit of a 2-digit DTC. After a 2.0 second pause, the second number of 12 volt, 0.5 second indications will equal the 1's digit. DTCs are separated by 0 volt indication for 3.0 seconds.



5. If no malfunctions are present, meter will read 12 volts once per second.

6. After recording DTCs turn ignition switch off.

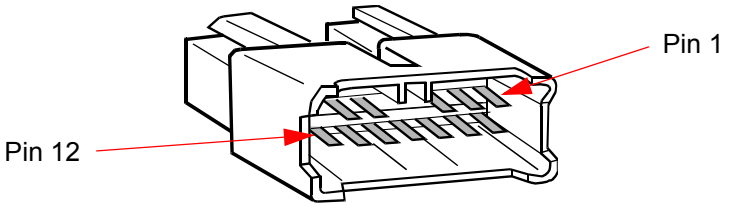
7. Disconnect voltmeter leads.

8. Erase DTCs when all repairs are completed.

To manually read DTCs from 1987-88 Chrysler Imports Colt Vista with Digital Decimal output, do the following:

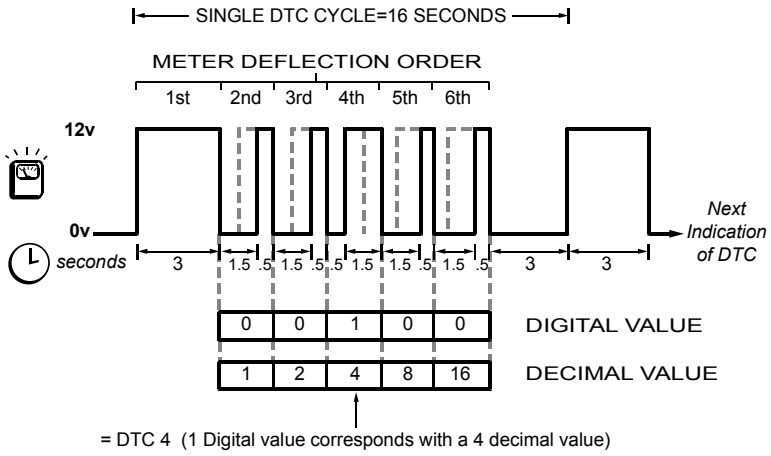
The DLC type is vehicle dependent; refer to the information displayed on the tester F0: HOW TO READ for the DLC type.

1. Locate the 12 pin Diagnostic Connector. Use F4: DJC Location from the Information menu for diagnostic connector location.
2. Connect an analog voltmeter red lead to pin 1 diagnosis terminal and the voltmeter black lead to pin 12 (12 pin) or terminal of diagnosis connector.



3. Turn the ignition switch to ON.

   Each single DTC output cycle takes 16 seconds. The first 12 volt deflection corresponds to a 3 second start indication, second 12 volt deflection corresponds to a decimal value of 1, third 12 volt deflection corresponds to a decimal value of 2, fourth 12 volt deflection corresponds to a decimal value of 4, fifth 12 volt deflection corresponds to a decimal value of 8, sixth 12 volt deflection corresponds to a decimal value of 16, followed by a 0 volt stop indication for 3 seconds. DTCs are decoded by interpreting the ON time of meter 12 volt deflections 2-6. If the meter displays 12 volts for 1.5 seconds, then that digital value is 1. If the meter displays 12 volts for 0.5 seconds, then that digital value is 0. To get the value of the DTC add the decimal value of digital 1's obtained in the meter deflection order. DTCs are separated by 12 volt, 3 second reading after the stop indication.



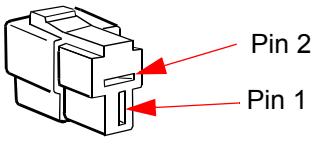
4. The normal DTC condition is indicated by meter indications 2-6, which are 12 volt, 1.5 second deflections separated by 0 volts for 0.5 seconds.
5. After recording DTCs turn ignition switch off.
6. Disconnect voltmeter leads.
7. Erase DTCs when all repairs are completed.

To manually read DTCs from models that use 2 pin and 3 pin DLC and analog voltmeter, do the following:

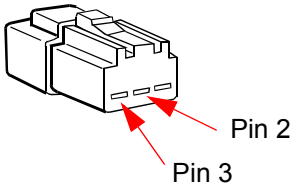
The DLC type is vehicle dependent; refer to the information displayed on the tester F0: HOW TO READ for the DLC type.

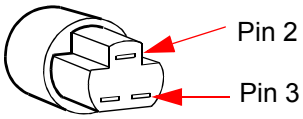
1. Locate the 2 pin or 3 pin Diagnostic Connector. Use F4: DJC Location from the Information menu for diagnostic connector location.

2a. For **2 pin** diagnostic connector, connect analog voltmeter red lead to pin 1 diagnosis terminal and voltmeter black lead to pin 2 (ground) terminal of diagnosis connector.



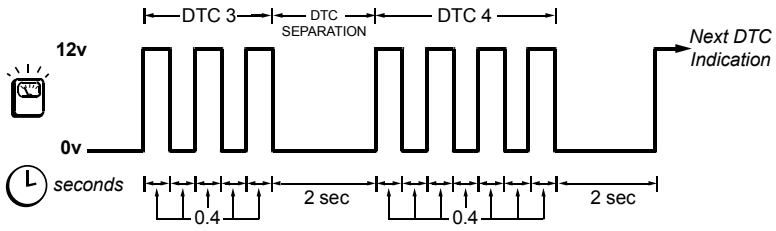
2b. For **3 pin** diagnostic connector, connect analog voltmeter red lead to pin 2 diagnosis terminal and voltmeter black lead to pin 3 (ground) terminal of diagnosis connector.





3. Turn ignition switch to ON.
4. DTC indication will begin on voltmeter.

   Voltmeter will fluctuate 0 to 12 volts if DTCs are stored in ECU. If a DTC is stored in ECU, the first number of 12 volt, 0.4 second indications will equal the 1's digit of a 1-digit DTC. DTC 12 volt pulses will be output every 0.4 seconds. DTCs are separated by 0 volts for 2 seconds.

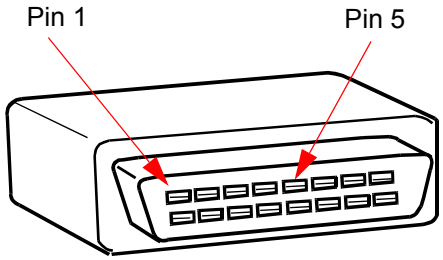


5. If no DTCs are in ECU, voltmeter will read constant 12 volts.
6. After recording DTCs turn ignition switch off.
7. Disconnect voltmeter leads.
8. Erase DTCs when all repairs are completed.

To manually read DTCs from 1994-95 Chrysler Import Vehicles using the Instrument Panel Malfunction Indicator Lamp, do the following:

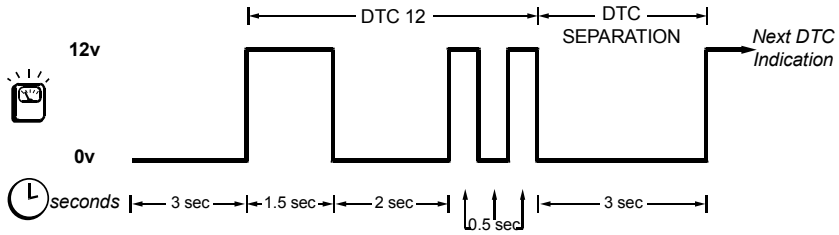
The DLC type is vehicle dependent; refer to the information displayed on the tester F0: HOW TO READ for the DLC type.

1. Locate the 16 pin Diagnostic Connector. Use F4: DJC Location from the Information menu for diagnostic connector location.
2. Jumper the 16 pin diagnostic connector pins 1 and 5 with the single wire Mitsubishi/Chrysler Imports jumper (P/N 02002106). Use F4: DJC Location from the Information menu for diagnostic connector location.



3. Turn ignition switch ON.
4. Observe the Malfunction Indicator Lamp (MIL) to read DTCs.

   MIL will turn ON/OFF if DTCs are stored in ECU. If a DTC is stored in ECU, the first number of MIL flashes indicates the 10's digit of a 2-digit DTC. After a 2.0 second pause, the second number of MIL flashes indicates the 1's digit. Each DTC is separated by MIL OFF for 3.0 seconds.



5. If no malfunctions are present, MIL will read ON once per second.
6. After recording DTCs turn ignition switch off.
7. Disconnect jumper leads.
8. Erase DTCs when all repairs are completed.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter or MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter or MIL. You can “select” the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory from DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

MODE F2: DTC

To read DTCs on all 1988-93 and select 1987, 1994 and 1995 Chrysler Imports vehicles you will need to locate the vehicle DLC and connect the Chrysler Imports Check Adapter to the tester and vehicle.

To locate the DLC, select F1: DLC Location from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

When Mode F2: DTC is selected, the tester displays four submodes:

DTC Submodes

F1: READ DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

NOTE

Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

When reading DTCs from Chrysler Imports vehicles make sure the engine is at normal operating temperature and testing is performed in a well-ventilated area.

Submode F1: Read DTC(s)

This submode provides automated DTC retrieval from the vehicle ECU. Step by step screen instructions guide you to connect the YELLOW Chrysler Imports Check adapter to the vehicle DLC and start and warm the engine to normal operating temperature. This is performed by following the tester instruction screens. If you have trouble, additional F1: READ DTC(s) retrieval information is described below.

This submode is available for all 1988-93 and select 1987, 1994 and 1995 Chrysler Imports vehicles. If you are unsure of the Read DTC test application, check the Code Type column in the Chrysler Imports Vehicle Coverage table (found at the beginning of this section). If the ECU Modes column indicates “Autocodes”, then the vehicle supports F1: READ DTC(s).

To read DTCs from all 1988-93 and select 1987, 1994 and 1995 Chrysler Imports ECUs using the F1: Read DTCs mode in Asian Imports cartridge, do the following:

1. Insert Asian cartridge into MASTERTECH or TECH 1/TECH1A.
2. Connect Chrysler Imports Check adapter (Yellow) to DLC.
3. Connect the Check adapter to the vehicle DLC. Press F1: DLC location from the Information menu for Data Link Connector location assistance.
4. Power MASTERTECH or TECH 1/TECH 1A with 12v power cable.
5. Select Chrysler Imports vehicle to test.
6. Press F2: DTCs from Chrysler Imports test mode menu.
7. Press F1: READ DTCs submode from DTC test menu. Follow instructions on the tester display.
8. Tester will automatically command the vehicle ECU into the correct mode required to read DTCs, and will display all received DTCs on the tester display.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter or MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter or MIL. You can “select” the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option 1 is an automated function which the tester clears DTCs from the vehicle ECU memory. This is performed by tester keypad presses. Option 2 clears the tester memory from DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

7. CHRYSLER IMPORTS DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Chrysler Imports vehicles are listed in the following charts.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD, OBD I SYSTEMS

YEAR: 1984	DTC NO.	DESCRIPTOR
1984	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SNSR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SENSOR OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	8	SPEED SENSOR OR CKT FAILURE

YEAR:1985	DTC NO.	DESCRIPTOR
1985	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SNSR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SENSOR OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	8	SPEED SENSOR OR CKT FAILURE

YEAR:1986	DTC NO.	DESCRIPTOR
1986	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SNSR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SENSOR OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	8	SPEED SENSOR OR CKT FAILURE

YEAR: 1987	DTC NO.	DESCRIPTOR
1987	1	O2 SENSOR OR CKT FAILURE
	2	CRANK ANGLE SENSOR OR CKT FAILURE IGNITION PULSE OR CKT
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	BARO SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SENSOR OR CKT MPS OR CIRCUIT FAILURE
	7	ENGINE COOLANT TEMP. SENSOR
	8	NO. 1 CYL. TDC SENSOR OR CKT

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	1	O2 SENSOR OR CKT FAILURE
	2	CRANK ANGLE SENSOR OR CKT IGNITION PULSE OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	BARO SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SENSOR OR CKT MPS OR CIRCUIT FAILURE

YEAR: 1988 (CONTINUED)	DTC NO.	DESCRIPTOR
	7	ENGINE COOLANT TEMP. SENSOR
	8	NO. 1 CYL. TDC SENSOR OR CKT

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	0	ECU OR CIRCUIT FAILURE
	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION PULSE OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SENSOR OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	11	O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MPS OR CIRCUIT FAILURE
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	TDC SENSOR OR CIRCUIT FAILURE NO. 1 CYL. TDC SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	DETONATION SNSR. OR CKT FAILURE
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC. OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE

YEAR: 1990	DTC NO.	DESCRIPTOR
1990	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MPS OR CIRCUIT FAILURE
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	TDC SENSOR OR CIRCUIT FAILURE NO. 1 CYL. TDC SENSOR OR CKT NO. 1 & 4 CYL. TDC SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	DETONATION SNSR. OR CKT FAILURE
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC. OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE REAR O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	TDC SENSOR OR CIRCUIT FAILURE NO. 1 CYL TDC SENSOR OR CKT NO. 1 & 4 CYL. TDC SENSOR OR CKT

YEAR: 1991 (CONTINUED)	DTC NO.	DESCRIPTOR
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	DETONATION SNSR. OR CKT FAILURE
	36	IGNITION TIMING ADJUSTMENT
	39	FRONT O2 SENSOR OR CKT FAILURE
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC. OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE IGN SIGNAL OR CKT (NO. 1 & 4 CYL)
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	61	TORQUE REDUCED SIGNAL (A/T)
	62	INDUCTION CNTRL. VALVE POS. SNSR

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE REAR O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	NO. 1 & 4 CYL. TDC SENSOR OR CKT TDC SENSOR OR CIRCUIT FAILURE NO. 1 CYL TDC SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	DETONATION SNSR. OR CKT FAILURE
	36	IGNITION TIMING ADJUSTMENT

YEAR: 1992 (CONTINUED)	DTC NO.	DESCRIPTOR
	39	FRONT O2 SENSOR OR CKT.
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC. OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE IGN SIGNAL OR CKT (NO. 1 & 4 CYL)
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	55	SERVO VALVE POS. SENSOR OR CKT
	61	TORQUE REDUCED SIGNAL (A/T)
	62	INDUCTION CNTRL. VALVE POS. SNSR

YEAR: 1993	DTC NO.	DESCRIPTOR
1993	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE FRONT HEATED O2 SENSOR OR CKT HEATED O2 SENSOR OR CKT FAILURE REAR HEATED O2 SENSOR OR CKT
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	ISC MOTOR POS. SWITCH OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	CAMSHAFT ANGLE SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	32	MAP SENSOR OR CKT FAILURE
	36	IGNITION TIMING ADJUSTMENT
	39	FRONT HEATED O2 SENSOR OR CKT
	41	INJECTOR OR CKT FAILURE

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC. OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE IGN SIGNAL OR CKT (NO. 1 & 4 CYL)
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	55	IAC VALVE POS. SENSOR OR CKT
	59	REAR HEATED O2 SENSOR OR CKT
	61	TORQUE REDUCED SIGNAL (A/T)
	62	INDUCTION CONT. VALVE POS. SNSR

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	0	ECU OR CIRCUIT FAILURE
	11	FRONT HEATED O2 SENSOR OR CKT O2 SENSOR OR CKT FAILURE HEATED O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	ISC MOTOR POS. SNSR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	CAMSHAFT ANGLE SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	32	MAP SENSOR OR CKT FAILURE
	36	IGNITION TIMING ADJUSTMENT
	39	HEATED O2 SENSOR OR CKT FAILURE FRONT HEATED O2 SENSOR OR CKT
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	43	EGR SYSTEM: VALVE, SOLENOID, VAC. OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE IGN SIGNAL OR CKT (NO. 1 & 4 CYL)
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	55	IAC VALVE POS. SENSOR OR CKT
	59	REAR HEATED O2 SENSOR OR CKT
	61	TORQUE REDUCED SIGNAL OR CKT
	62	INDUCTION CONT. VALVE POS. SNSR
	69	REAR HEATED O2 SENSOR OR CKT

YEAR: 1995	DTC NO.	DESCRIPTOR
1995	11	(FRONT) HO2 SENSOR CIRCUIT MALFUNCTION (I4) LEFT BANK HO2 SENSOR CIRCUIT MALFUNCTION (V6) CAM/CRANKSHAFT POSITION SENSOR SIGNAL MALFUNCTION (AVENGER/SEBRING)
	12	VOLUME AIR FLOW CIRCUIT MALFUNCTION
	13	IAT SENSOR CIRCUIT MALFUNCTION MAP SENSOR CIRCUIT, NO PRESSURE CHANGE (2.0L AVENGER/SEBRING)
	14	TPS CIRCUIT MALFUNCTION MAP SENSOR CIRCUIT MALFUNCTION (AVENGER/SEBRING)
	15	NO VSS SIGNAL TO PCM
	16	KNOCK SENSOR NO. 1 CIRCUIT MALFUNCTION (2.0L AVENGER/SEBRING)
	17	ENGINE TEMP. TOO LOW, NO CLOSED LOOP FUEL CONTROL
	21	ECT SENSOR CIRCUIT MALFUNCTION (HEATED) O2 SENSOR SYSTEM MALFUNCTION (AVENGER/SEBRING)
	22	CRANKSHAFT POSITION SENSOR CIRCUIT MALFUNCTION ECT SENSOR CIRCUIT MALFUNCTION (AVENGER/SEBRING)
	23	CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION IAT SENSOR CIRCUIT MALFUNCTION

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	24	VSS/REED SWITCH CIRCUIT MALFUNCTION TPS CIRCUIT MALFUNCTION (AVENGER/SEBRING)
	25	BARO PRESSURE SENSOR CIRCUIT MALFUNCTION IAC CONTROL MOTOR CIRCUIT MALFUNCTION (AVENGER/SEBRING)
	27	FUEL INJECTOR CONTROL CIRCUIT MALFUNCTION
	31	EVAP PURGE SOLENOID CIRCUIT MALFUNCTION EVAP SYSTEM MALFUNCTION (2.0L AVENGER/SEBRING) KNOCK SENSOR CIRCUIT MALFUNCTION (STEALTH DOHC)
	32	EGR SYSTEM MALFUNCTION (AVENGER/SEBRING) MAP SENSOR CIRCUIT MALFUNCTION (1.5L COLT/SUMMIT)
	33	A/C CLUTCH RELAY CIRCUIT MALFUNCTION
	35	FAN CONTROL RELAY CIRCUIT MALFUNCTION
	36	IGNITION TIMING ADJUSTMENT SIGNAL CIRCUIT MALFUNCTION SECONDARY PULSED AIR SYSTEM MALFUNCTION (2.0L AVENGER/SEBRING)
	37	PARK/NEUTRAL POSITION SWITCH A/T (2.0L AVENGER/SEBRING)
	39	HO2 SENSOR CIRCUIT MALFUNCTION (RIGHT BANK, V6)
	41	GENERATOR FIELD CIRCUIT MALFUNCTION (AVENGER/SEBRING)
	42	ASD/FUEL PUMP RELAY CIRCUIT MALFUNCTION
	43	EGR SYSTEM: VALVE, SOLENOID, VAC. OR TEMP. SENSOR IGNITION MISFIRE DETECTED (2.0L AVENGER/SEBRING)
	44	IGNITION COIL/TRANSISTOR CYLINDERS 1/4 (STEALTH DOHC) BATTERY TEMP. SENSOR VOLTAGE OUT OF LIMITS
	46	CHARGING SYSTEM VOLTAGE TOO HIGH
	47	CHARGING SYSTEM VOLTAGE TOO LOW
	51	FUEL SYSTEM LEAN
	52	IGNITION COIL/TRANSISTOR CYLINDERS 2/5 FUEL SYSTEM RICH
	53	IGNITION COIL/TRANSISTOR CYLINDERS 3/6 INTERNAL PCM FAILURE (2.0L AVENGER/SEBRING)

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	54	NO CAMSHAFT SIGNAL AT PCM
	55	IAC VALVE POSITION SENSOR CIRCUIT MALFUNCTION
	59	REAR HO2 SENSOR CIRCUIT MALFUNCTION (LEFT BANK, V6)
	61	TORQUE REDUCTION SIGNAL CIRCUIT MALFUNCTION
	62	PCM FAILURE, SRI MILE NOT STORED INDUCTION CONTROL VALVE SYSTEM MALFUNCTION (STEALTH, DOHC NON-TURBO)
	64	CATALYTIC CONV. EFFICIENCY FAILURE M/T (2.0L AVENGER/SEBRING)
	65	PCM FAILURE, EEPROM WRITE DENIED POWER STEERING PRESS. SWITCH FAILURE M/T (2.0L AVENGER/SEBRING)
	66	NO CCD MESSAGE FROM TCM (A/T)
	69	HO2 SENSOR CIRCUIT MALFUNCTION (RIGHT BANK, V6)
	71	LOW 5 VOLT SUPPLY TO TPS AND MAP

OBD II SYSTEMS

YEAR: 1996-98	DTC NO.	DESCRIPTOR
1996-98 OBD II	P0100	Volume Air Flow Circuit Malfunction
	P0105	MAP Sensor Circuit Malfunction
	P0106	BARO Pressure Circuit Out of Range
	P0107	MAP Sensor Voltage Too High
	P0108	MAP Sensor Voltage Too Low
	P0110	IAT Sensor Circuit Malfunction
	P0112	IAT Sensor Voltage Too Low
	P0113	IAT Sensor Voltage Too High
	P0115	ECT Circuit Malfunction
	P0117	ECT Sensor Voltage Too Low
	P0118	ECT Sensor Voltage Too High
	P0120	TPS Circuit Malfunction

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0121	TPS Voltage does not Agree with MAF
	P0122	TPS Voltage Too Low
	P0123	TPS Voltage Too High
	P0125	Excessive Time to Reach Closed Loop (Avenger/Sebring/non-turbo Talon)
	P0125	Coolant Temp. Too Low, No Closed Loop Operation
	P0130	HO2 Sensor, Bank 1 Sensor 1, Circuit Malfunction
	P0131	Upstream HO2 Sensor, Short to Ground
	P0132	Upstream HO2 Sensor, Short to Battery Voltage
	P0133	Upstream HO2 Sensor, Response Rate
	P0134	Upstream HO2 Sensor, not Switching
	P0135	Upstream HO2 Sensor, Heater Circuit Malfunction
	P0136	HO2 Sensor, Bank 1 Sensor 2, Circuit Malfunction
	P0137	Downstream HO2 Sensor, Short to Ground
	P0138	Downstream HO2 Sensor, Short to Battery Voltage
	P0139	Downstream HO2 Sensor, not Switching
	P0140	Downstream HO2 Sensor, not Switching
	P0141	Downstream HO2 Sensor, Heater Circuit Malfunction
	P0151	Upstream HO2 Sensor, Front Bank, Short to Ground
	P0152	Upstream HO2 Sensor, Front Bank, Short to Battery Voltage
	P0153	Upstream HO2 Sensor, Front Bank, Slow Response
	P0154	Upstream HO2 Sensor, Front Bank, no Switching
	P0155	HO2 Sensor, Bank 2 Sensor 1, Heater Circuit Malfunction
	P0156	O2 Sensor, Bank 2 sensor 2, Circuit Malfunction
	P0157	Downstream HO2 Sensor, Front Bank, Short to Ground
	P0158	Downstream HO2 Sensor, Front Bank, Short to Battery Voltage
	P0160	Downstream HO2 Sensor, Front Bank, not Switching
	P0161	HO2 Sensor, Bank 2 Sensor 2, Heater Circuit Malfunction
	P0170	Fuel Trim, Bank 1, System Malfunction
	P0171	Fuel System, Lean Condition
	P0172	Fuel System, Rich Condition
	P0173	Fuel Trim, Bank 2, System Malfunction
	P0174	Fuel System, Front Bank, Lean Condition

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0175	Fuel System, Front Bank, Rich Condition
	P0201	Fuel Injector No. 1, Circuit Malfunction
	P0202	Fuel Injector No. 2, Circuit Malfunction
	P0203	Fuel Injector No. 3, Circuit Malfunction
	P0204	Fuel Injector No. 4, Circuit Malfunction
	P0205	Fuel Injector No. 5, Circuit Malfunction
	P0206	Fuel Injector No. 6, Circuit Malfunction
	P0220	Fuel Pump Relay Control Circuit Malfunction
	P0300	Random Misfire Detected
	P0301	Cylinder No. 1, Misfire Detected
	P0302	Cylinder No. 2, Misfire Detected
	P0303	Cylinder No. 3, Misfire Detected
	P0304	Cylinder No. 4, Misfire Detected
	P0305	Cylinder No. 5, Misfire Detected
	P0306	Cylinder No. 6, Misfire Detected
	P0325	Knock Sensor 1, Circuit Malfunction
	P0335	Crankshaft Position Sensor, Circuit Malfunction
	P0340	Camshaft Position Sensor, Circuit Malfunction
	P0351	Ignition Coil No. 1, Primary Circuit Malfunction
	P0352	Ignition Coil No. 2, Primary Circuit Malfunction
	P0400	EGR Flow System Malfunction
	P0401	EGR System Malfunction
	P0403	EGR Solenoid Circuit Malfunction
	P0420	Catalyst System, Bank 1, Below Efficiency Threshold
	P0421	Warm Up Catalyst, Bank 1, Below Efficiency Threshold
	P0422	Catalytic Converter Efficiency Failure
	P0431	Warm Up Catalyst, Bank 2, Below Efficiency Threshold
	P0432	Catalytic Converter, Front Bank, Efficiency Failure
	P0440	EVAP Control System Malfunction
	P0441	EVAP Purge Flow Monitor System Malfunction
	P0442	EVAP Control System, Leak Detected
	P0443	EVAP Purge System Control Valve, Circuit Malfunction

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0446	EVAP Vent Control System Malfunction
	P0450	EVAP Control System Pressure Sensor Malfunction
	P0455	EVAP Control System, Large Leak Detected
	P0500	VSS Circuit Malfunction
	P0505	IAC System Malfunction
	P0510	Closed TP Switch, Circuit Malfunction
	P0551	Power Steering Pressure Sensor Circuit, Range/Performance
	P0600	PCM Malfunction, SPI Communication
	P0601	PCM Internal Malfunction
	P0605	Internal PCM Failure
	P0700	EATX Controller Detects DTC
	P0705	Transmission Range Sensor (PRNDL Input) Circuit Malfunction
	P0710	Transmission Temp. Sensor Circuit Malfunction
	P0715	Speed Error: Input Speed Sensor Circuit
	P0720	Speed Error: Output Speed Sensor Circuit
	P0725	A/T Engine Speed does Not match PCM Engine Speed
	P0731	1st Gear Incorrect Ratio
	P0732	2nd Gear Incorrect Ratio
	P0733	3rd Gear Incorrect Ratio
	P0734	4th Gear Incorrect Ratio
	P0736	Reverse Gear Incorrect Ratio
	P0740	TCC Lockup Control Out of Range
	P0750	LR Solenoid Circuit Error
	P0755	2-4 Solenoid Circuit Error
	P0760	OD Solenoid Circuit Error
	P0765	OD Solenoid Circuit Error
	P1100	Induction Control Motor Position Sensor Circuit Malfunction
	P1101	Traction Control Vacuum Solenoid Malfunction
	P1102	Traction control Ventilation solenoid Malfunction
	P1103	Turbo Waste Gate Actuator Malfunction
	P1104	Turbo Waste Gate Solenoid Malfunction
	P1105	Fuel Pressure Solenoid Circuit Malfunction

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1294	IAC System, Target Idle not Reached
	P1295	TPS Circuit, no 5 Volt Supply
	P1296	MAP Circuit, no 5 Volt Supply
	P1297	No Change in MAP from Start to Run
	P1300	Ignition Timing Adjustment Circuit Malfunction
	P1390	Timing Belt Skipped One or More Teeth
	P1391	Intermittent Loss of Cam/Crankshaft Position Sensor
	P1400	MDP Sensor Circuit Malfunction
	P1443	EVAP Pure System Control Valve 2, Circuit Malfunction
	P1486	EVAP Leak Monitor Detects Pinched Hose
	P1487	High Speed Radiator Fan Control Relay, Circuit Malfunction
	P1489	High Speed Condenser Fan Control Relay, Circuit Malfunction
	P1490	Low Speed Fan Control Relay Circuit Malfunction
	P1492	Battery Temp. Sensor, Voltage Too High
	P1493	Battery Temp. Sensor, Voltage Too Low
	P1494	EVAP Vent Solenoid System Malfunction
	P1495	EVAP Vent Solenoid Circuit Malfunction
	P1496	PCM 5 Volt Supply to MAP and TPS Too Low
	P1498	High Speed Radiator Fan Ground Control Relay, Circuit Malfunction
	P1500	Generator FR Terminal Circuit Malfunction
	P1600	Serial Communication Link Malfunction
	P1696	PCM Failure, EEPROM Write Denied
	P1697	PCM Failure, SRI Mile not Stored
	P1698	No CCD Messages from EATX-ECM (A/T)
	P1715	PG Assembly Malfunction
	P1738	Transmission Overheat, High Temp. Operation Activated
	P1739	TCM Power-up While Vehicle Being Driven
	P1750	Shift Solenoid Assembly Malfunction
	P1765	TCM Senses Volts on Pressure Switch When Unexpected
	P1767	EATX Relay Always ON, Contacts Closed
	P1768	EATX Relay Always Off, Contacts Open
	P1770	Inadequate Element Volume: L/R

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1771	Inadequate Element Volume: 2-4
	P1772	Inadequate Element Volume: OD
	P1775	Solenoid Switch Valve Latched in LU Position
	P1776	Solenoid Switch Valve Latched in LR Position
	P1781	OD Pressure Switch Circuit
	P1782	2-4 Pressure Switch Circuit
	P1784	L/R Pressure Switch Circuit
	P1787	OD Hydraulic Pressure Switch Circuit
	P1788	2-4 Hydraulic Pressure Switch Circuit
	P1789	OD/2-4 Hydraulic Pressure Switch Circuit
	P1790	Error After Shift- Check Speed Code Error
	P1791	ECT Level Input to TCM, Trans. Slips/No Pressure, Check Fluid Level
	P1792	Battery Power Disconnected Since Last Power Down
	P1793	TRD Link Communication Error
	P1794	Speed Sensor Ground
	P1795	TCM Internal Control Module Malfunction
	P1798	Worn Transmission Fluid, Shudder Detected with A/C Clutch
	P1799	Calculated Transmission Fluid Temp. in Use
	P1899	Park/Neutral Switch Malfunction (A/T)

DAIHATSU

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1. VEHICLES AND SYSTEMS

Using the Asian cartridge, the following Daihatsu vehicles can be diagnosed.

YEAR	MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1988	CHARADE	1.0L I3	G100	MPI	NONE	MILCODES

YEAR	MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1989	CHARADE	1.0L I3	G100	MPI	NONE	MILCODES
	CHARADE	1.3L I4	G102	MPI	NONE	MILCODES

YEAR	MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1990	CHARADE	1.0L I3	G100	MPI	NONE	MILCODES
	CHARADE	1.3L I4	G102	MPI	NONE	MILCODES
	ROCKY	1.6L I4	F300	MPI	NONE	MILCODES

YEAR	MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1991	CHARADE	1.0L I3	G100	MPI	NONE	MILCODES
	CHARADE	1.3L I4	G102	MPI	NONE	MILCODES
	ROCKY	1.6L I4	F300	MPI	NONE	MILCODES

YEAR	MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1992	CHARADE	1.0L I3	G100	MPI	NONE	MILCODES
	CHARADE	1.3L I4	G102	MPI	NONE	MILCODES
	ROCKY	1.6L I4	F300	MPI	NONE	MILCODES

2. DAIHATSU SPECIFIC INFORMATION

The *Daihatsu Specific Information* section defines the Daihatsu vehicles covered by the Asian Imports Cartridge, the test modes available, and operating instructions for DTC Entry. A complete list of Daihatsu Diagnostic Trouble Codes is also included in Chapter 7.

3. TEST MODES AVAILABLE

The following test modes are available when testing Daihatsu vehicles. Operating instructions for test modes other than Mode F1: DTC ENTRY are included in the Common Test Modes OBD, OBD I Systems section.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

SUBMODE F3: ID INFO
SUBMODE F4: DJC LOCATION

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Daihatsu vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

> **NOTE**
>
> Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery adapter cable.

3. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester Stand-alone Display

4. If the display is correct, press ENTER. If the display is not correct, refer to Appendix D.
5. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite Daihatsu.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE

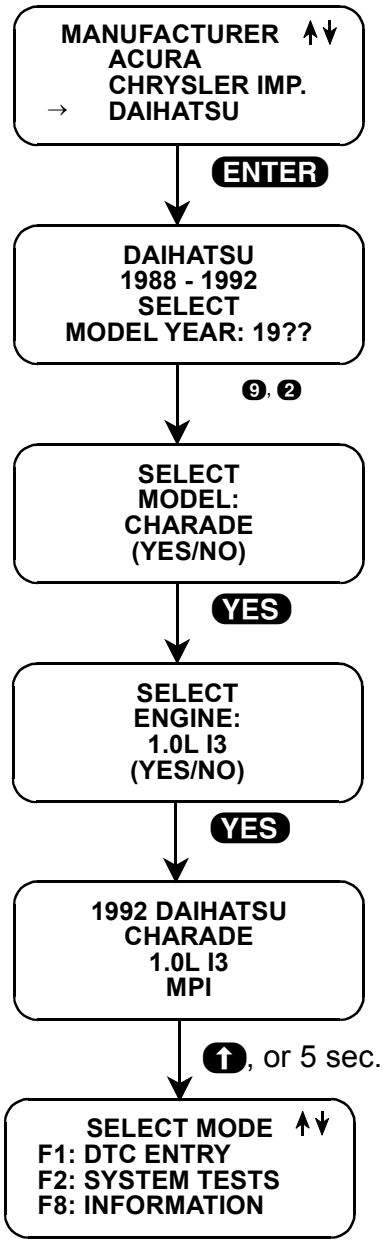
Next, the Engine Select menu is displayed. Press NO until the engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to *TEST MODES* on page 8, and the Common Test Modes OBD, OBD I Systems sections for instructions on operating the test modes with Daihatsu vehicles.



Daihatsu Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
ENTER	Confirm Power-up display.
EXIT	Return to previous display.
↑ ↓	Scrolls through instruction displays.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Daihatsu vehicles may be selected. You may select Mode F1: DTC Entry, Mode F5: System Tests, or Mode F8: Information without connecting the tester to the vehicle. Operating instructions for Mode F1: DTC Entry are included in *Submode F1: Enter DTC(s)* on page 9. Operating instructions for the other test modes are included in the Common Test Modes OBD, OBD I Systems section.

Detailed operating instructions for using Mode F1: DTC Entry with Daihatsu vehicles are included in the following procedure.

READING CODES

When Mode F1: DTC Entry is selected, the tester displays submodes which, after your selection, provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

To read DTC codes on Daihatsu vehicles you must connect the 6-pin Daihatsu jumper (P/N 02002073) to the Diagnostic Jumper Connector (DJC) and observe the flashing MIL. If you do not know where the DJC is located, select Mode F4: DJC Location from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the ECU, you can input the DTC into the tester so the tester can define the code. A complete list of Daihatsu DTCs is also included in *DAIHATSU DIAGNOSTIC TROUBLE CODES (DTCs)* on page 11.

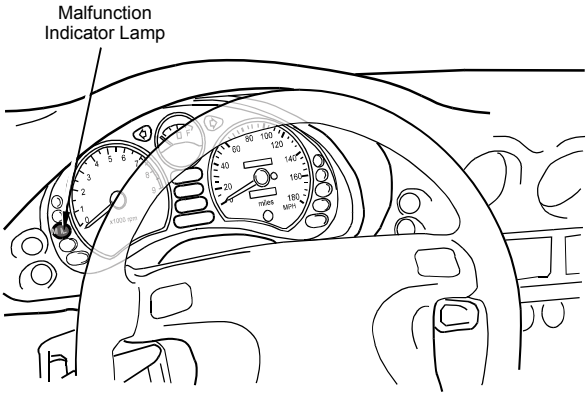
MODE F1: DTC ENTRY

When Mode F1: DTC ENTRY is selected, the tester displays five submodes:

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Manually Reading DTCs

To manually read Diagnostic Trouble Codes (DTCs) on Daihatsu vehicles from 1988-92, locate and jumper the Diagnostic Connector, then read the Malfunction Indicator Lamp (MIL). This method requires the 6-pin Daihatsu jumper (P/N 02002073) which connects 2 pins of the 6 pin DJC. The DTCs are flashed out on the dashboard mounted MIL. Refer to the section on manually reading DTCs from the 1988-92 Daihatsu vehicles in this section.



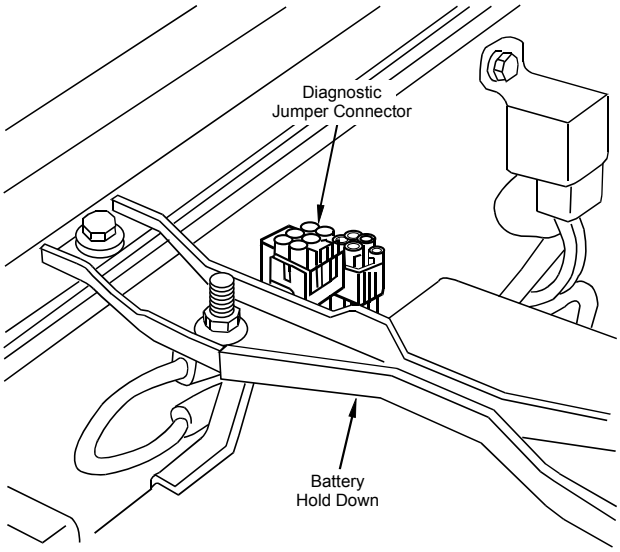
Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the factory service manual for this information, make sure that you are following the correct steps for the system you are working on.

Submode F1: Enter DTC(s)

This submode provides you with a description of how to obtain DTC information from the ECU and how to enter this information into the tester. On Daihatsu vehicles, there is one method to enter manually read DTC's which is the Enter DTC submode.

The Enter DTC submode has two question marks on the tester display for entering the DTC. The tester screen prompts you to enter the DTC(s) read off the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the MIL. Incorrect MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section.

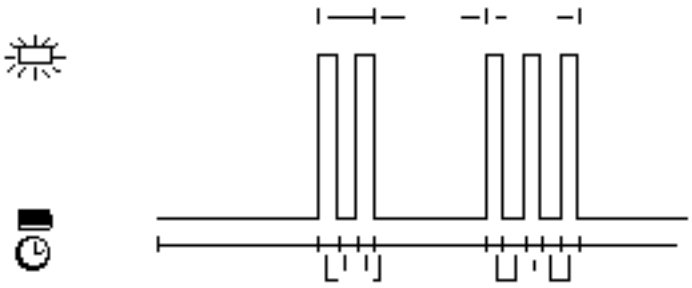


Example: 1991 Rocky

To read Daihatsu MIL DTCs manually, do the following:

1. Before testing, check the following initial conditions: Battery voltage of 11 volts or more, throttle valve fully closed, all accessory switches turned OFF.
2. Locate the 6 pin Diagnostic Jumper Connector (DJC).
3. Jump TEST (T) and GROUND terminals by connecting the 6 pin Daihatsu Jumper (P/N 02002073) to the vehicle's 6 pin diagnosis jumper connector.
4. Turn ignition switch to ON but do not start the engine.
5. Dashboard MIL will begin flashing DTCs.

   If DTCs are stored in the ECU, the MIL will begin indicating the DTCs 4.5 seconds after the ignition is switched ON. MIL flash is 0.5 seconds ON, and each flash is separated by 0.5 seconds. Each DTC is separated by a 2.5 second interval. DTC series is separated by a 4.5 second interval. If no DTCs are stored in ECU, the normal condition (DTC 1) will be flashed on the MIL.
6. The normal DTC condition is one MIL flash in 5 seconds.
7. Disconnect 6 pin Daihatsu Jumper when finished.
8. Erase DTCs when all repairs are completed.



Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions You can also select the DTCs obtained from the MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the MIL. You can "Select" the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides a way of reviewing DTCs that you selected or entered in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to choose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory of DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

7. DAIHATSU DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Daihatsu vehicles are listed in the following charts.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	1	NO DTCs-NORMAL OPERATION
	2	PRESSURE SENSOR OR CKT FAILURE
	3	IGNITION SIGNAL OR CKT FAILURE
	4	ECT SENSOR OR CIRCUIT FAILURE
	5	O2 SENSOR OR CIRCUIT FAILURE
	6	CRANK ANGLE SENSOR OR CKT
	7	TP SENSOR OR CIRCUIT FAILURE
	8	IAT SENSOR OR CIRCUIT FAILURE
	9	SPEED SENSOR OR CIRCUIT FAILURE
	10	STARTER SIGNAL OR CKT FAILURE
	11	SWITCH SIGNAL OR CKT FAILURE
	12	EGR CIRCUIT FAILURE

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	1	NO DTCs-NORMAL OPERATION
	2	PRESSURE SENSOR OR CKT FAILURE
	3	IGNITION SIGNAL OR CKT FAILURE
	4	ECT SENSOR OR CIRCUIT FAILURE
	5	O2 SENSOR AND/OR FUEL SYSTEM CKT O2 SENSOR OR CIRCUIT FAILURE
	6	CRANK ANGLE SENSOR OR CKT
	7	TP SENSOR OR CIRCUIT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	9	SPEED SENSOR OR CKT FAILURE
	10	STARTER SIGNAL OR CKT FAILURE
	11	SWITCH SIGNAL OR CKT FAILURE

YEAR: 1989	DTC NO.	DESCRIPTOR
	12	EGR CIRCUIT FAILURE
	15	AIR/FUEL RATIO RICH FAILURE
	16	AIR/FUEL RATIO LEAN FAILURE

YEAR: 1990	DTC NO.	DESCRIPTOR
1990	1	NO DTCs-NORMAL OPERATION
	2	PRESSURE SENSOR OR CKT FAILURE
	3	IGNITION SIGNAL OR CKT FAILURE
	4	ECT SENSOR OR CIRCUIT FAILURE
	5	O2 SENSOR AND/OR FUEL SYSTEM CKT O2 SENSOR OR CIRCUIT FAILURE
	6	CRANK ANGLE SENSOR OR CKT
	7	TP SENSOR OR TPS CKT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	9	SPEED SENSOR OR CKT FAILURE
	10	STARTER SIGNAL OR CKT FAILURE
	11	SWITCH SIGNAL OR CKT FAILURE
	12	EGR CIRCUIT FAILURE
	15	AIR/FUEL RATIO RICH FAILURE
	16	AIR/FUEL RATIO LEAN FAILURE

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	1	NO DTCs-NORMAL OPERATION
	2	PRESSURE SENSOR OR CKT FAILURE
	3	IGNITION SIGNAL OR CKT FAILURE
	4	ECT SENSOR OR CIRCUIT FAILURE
	5	O2 SENSOR AND/OR FUEL SYSTEM CKT O2 SENSOR OR CIRCUIT FAILURE
	6	CRANK ANGLE SENSOR OR CKT
	7	TP SENSOR OR CIRCUIT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	9	SPEED SENSOR OR CKT FAILURE

YEAR: 1991	DTC NO.	DESCRIPTOR
	10	STARTER SIGNAL OR CKT FAILURE
	11	SWITCH SIGNAL OR CKT FAILURE
	12	EGR CIRCUIT FAILURE
	15	AIR/FUEL RATIO RICH FAILURE
	16	AIR/FUEL RATIO LEAN FAILURE

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	1	NO DTCs-NORMAL OPERATION
	2	PRESSURE SENSOR OR CKT FAILURE
	3	IGNITION SIGNAL OR CKT FAILURE
	4	ECT SENSOR OR CIRCUIT FAILURE
	5	O2 SENSOR AND/OR FUEL SYSTEM CKT O2 SENSOR OR CIRCUIT FAILURE
	6	CRANK ANGLE SENSOR OR CKT
	7	TP SENSOR OR CIRCUIT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	9	SPEED SENSOR OR CKT FAILURE
	10	STARTER SIGNAL OR CKT FAILURE
	11	SWITCH SIGNAL OR CKT FAILURE
	12	EGR CIRCUIT FAILURE
	15	AIR/FUEL RATIO RICH FAILURE
	16	AIR/FUEL RATIO LEAN FAILURE

HONDA

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1. VEHICLES AND SYSTEMS

Using the Asian Imports Cartridge, the following Honda vehicles can be diagnosed.

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1985					
ACCORD SEI	1.8L I4	ES3	MPFI	ECU LED	NONE
CIVIC CRX SI	1.5L I4	EW3	MPFI	ECU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1986					
ACCORD	2.0L I4	BS	2V CARB	ECU LED	NONE
ACCORD LXI	2.0L I4	BT	MPFI	ECU LED	NONE
CIVIC CRX SI	1.5L I4	EW3	MPFI	ECU LED	NONE
CIVIC SI	1.3L I4	EV1	3V CARB	ECU LED	NONE
PRELUDE	2.0L I4	BT	MPFI	ECU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1987					
ACCORD	2.0L I4	A20A3	MPFI	ECU LED	NONE
CIVIC	1.5L I4	D15A3	MPFI	ECU LED	NONE
CIVIC CRX SI	1.5L I4	D15A3	MPFI	ECU LED	NONE
PRELUDE	2.0L I4	A20A3	MPFI	ECU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1988					
ACCORD	2.0L I4	A20A3	MPFI	ECU LED	NONE
CIVIC	1.5L I4	D15B2	TBI	ECU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
CIVIC CRX	1.5L I4	D15B6, D15B2	MPFI TBI	ECU LED ECU LED	NONE NONE
CIVIC CRX SI	1.6L I4	D16A6	MPFI	ECU LED	NONE
PRELUDE	2.0L I4	B20A3	2-1V CARB	ECU LED	NONE
PRELUDE	2.0L I4	B20A5	MPFI e	CU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1989					
ACCORD	2.0L I4	A20A3	MPFI	ECU LED	NONE
CIVIC	1.5L I4	D15B1	TBI	ECU LED	NONE
CIVIC, CIVIC WAGON	1.6L I4	D16A6	MPFI	ECU LED	NONE
CIVIC, CIVIC WAGON, CRX	1.5L I4	D15B2	TBI	ECU LED	NONE
CRX HF	1.5L I4	D15B6	MPFI	ECU LED	NONE
CRX SI	1.6L I4	D16A6	MPFI	ECU LED	NONE
PRELUDE	2.0L I4	B20A3	2-1V CARB	ECU LED	NONE
PRELUDE	2.0L I4	B20A5	MPFI	MIL/LED	SCC

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1990					
ACCORD	2.2L I4	F22A1, F22A4	MPFI MPFI	MIL/LED MIL/LED	SCC SCC
CIVIC	1.5L I4	D15B1	TBI	ECU LED	NONE
CIVIC	1.6L I4	D16A6	MPFI	ECU LED	NONE
CRX	1.5L I4	D15B2, D15B6	MPFI MPFI	ECU LED ECU LED	NONE NONE
CRX SI	1.6L I4	D16A6	MPFI	ECU LED	NONE
PRELUDE	2.0L I4	B20A3	2-2V CARB	ECU LED	NONE
PRELUDE SI	2.0L I4	B20A5	MPFI	MIL/LED	SCC
PRELUDE SI	2.1L I4	B21A1	MPFI	MIL/LED	SCC

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1991					
ACCORD	2.2L I4	F22A1, F22A4	MPFI MPFI	MIL/LED ECU LED	SCC SCC
CIVIC	1.5L I4	D15B1	MPFI	ECU LED	NONE
CIVIC	1.6L I4	D16A6	MPFI	ECU LED	NONE
CRX	1.5L I4	D15B2 D15B6	MPFI MPFI	ECU LED ECU LED	NONE NONE
CRX SI	1.6L I4	D16A6	MPFI	ECU LED	NONE
PRELUDE	2.0L I4	B20A3	2-1V CARB	ECU LED	NONE
PRELUDE SI	2.0L I4	B20A5	MPFI	MIL/LED	SCC
PRELUDE SI	2.1L I4	B21A1	MPFI	MIL/LED	SCC

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1992					
ACCORD	2.2L I4	F22A1, F22 A6	MPFI MPFI	MIL/LED MIL/LED	SCC SCC
CIVIC	1.5L I4	D15B7, D15B8	MPFI MPFI	MIL/LED MIL/LED	SCC SCC
CIVIC	1.5L I4 VTEC- E	D15Z1	MPFI	MIL/LED	SCC
CIVIC	1.6L I4 VTEC	D16Z6	MPFI	MIL/LED	SCC
PRELUDE	2.2, 2.3L I4	F22A1 H23A1	MPFI MPFI	MIL/LED MIL/LED	SCC SCC

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1993					
ACCORD	2.2L I4	F22A1, F22A6	MPFI MPFI	MIL/LED MIL/LED	SCC SCC
CIVIC	1.5L I4	D15B7, D15B8	MPFI MPFI	MIL/LED MIL/LED	SCC SCC

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
CIVIC	1.5L I4 VTEC- E	D15Z1	MPFI	MIL/LED	SCC
CIVIC	1.6L I4 VTEC	D16Z6	MPFI	MIL/LED	SCC
CIVIC DEL SOL	1.5, 1.6L I4	D15B7	SMPFI	MIL/LED	SCC
	VTEC	D16Z6	SMPFI	MIL/LED	SCC
PRELUDE	2.2L I4	F22A1	SMPFI	MIL/LED	SCC
PRELUDE	2.2L I4 VTEC	H22A1	SMPFI	MIL/LED	SCC
PRELUDE	2.3L I4	H23A1	SMPFI	MIL/LED	SCC

MODEL	ENGINE	ENGINE TYPE	FUEL SYSTEM	CODE TYPE	JUMPER TYPE
1994					
ACCORD	2.2L I4	F22B2	SMPFI	MIL/LED	SCC
ACCORD	2.2L I4 VTEC	F22B1	SMPFI	MIL/LED	SCC
CIVIC	1.5L I4	D15B7,	SMPFI	MIL/LED	SCC
		D15B8	SMPFI	MIL/LED	SCC
CIVIC	1.5L I4 VTEC	D15Z1	SMPFI	MIL/LED	SCC
CIVIC	1.6L I4 VTEC	D16Z6	SMPFI	MIL/LED	SCC
CIVIC DEL SOL	1.5L I4	D15B7	SMPFI	MIL/LED	SCC
CIVIC DEL SOL	1.6L I4	B16A3	SMPFI	MIL/LED	SCC
CIVIC DEL SOL	1.6L I4 VTEC	D16Z6	SMPFI	MIL/LED	SCC
PRELUDE	2.2L I4	F22A1	SMPFI	MIL/LED	SCC
PRELUDE	2.2L I4 VTEC	H22A1	SMPFI	MIL/LED	SCC
PRELUDE	2.3L I4	H23A1	SMPFI	MIL/LED	SCC

2. HONDA SPECIFIC INFORMATION

Two Ways to Diagnose Honda

Honda powertrain diagnosis can be performed with the Asian Imports cartridge installed in a Tech 1, Tech 1A, or Mastertech tester. Additionally, Honda vehicles can be diagnosed with the aftermarket version of the Honda OEM level program card software using the Mastertech tester only. Operating instructions and test mode information are available for the OEM level software in the Acura/Honda Program Card Operator's Manual.

If you do not have the necessary Program Card and Mastertech tester to perform OEM level diagnostics, you can use the Asian Imports Cartridge for limited model year coverage. The following Honda section includes the test modes available, how to connect the tester to the vehicle, operating instructions for DTC entry, and the applicable DTCs for each model year.

3. TEST MODES AVAILABLE

The following test modes are available when testing Honda vehicles. Operating instructions for test modes other than DTC Entry are included in the Common Test Modes OBD, OBD I Systems section. There are also specific instructions for operating the test modes. See *TEST MODES* on page 11.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

SUBMODE F2: SCC LOCATION*
SUBMODE F3: ID INFO
SUBMODE F5: ECU LOCATION*

* Not available on certain Honda vehicles.

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Honda vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

> **NOTE**
>
> Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the optional battery adapter cable.

3. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

FIGURE 1-1. Tester stand-alone display

4. If the display is correct, press **ENTER**. If the display is not correct, refer to Appendix D.
5. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.
6. When the vehicle has been selected, refer to the Honda Test Modes section for information on how to prepare the vehicle to retrieve DTCs.

   On some late model Honda vehicles, the Service Check Connector (SCC) jumper (P/N 02001935) is required to retrieve DTCs. If available, use F2: SCC LOCATION from the Information menu to locate the service check connector.

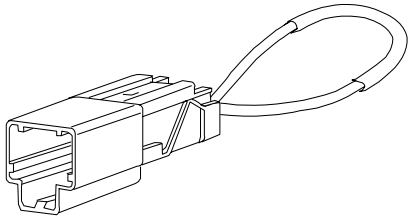


FIGURE 1-2. Service Check Connector Jumper

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite the manufacturer you wish to select.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE

Next, the Engine Select menu is displayed. Press NO until the engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. See *TEST MODES* on page 11, and the Common Test Modes OBD, OBD I Systems section for instructions on operating the test modes with Honda vehicles.

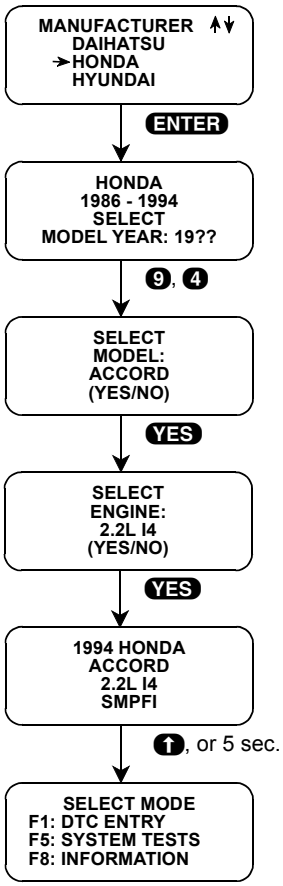


FIGURE 1-3. Honda Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
ENTER	Confirm Power-up display.
EXIT	Return to previous display.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Honda vehicles may be selected. You may select Mode F1: DTC ENTRY, Mode F5: SYSTEM TESTS or Mode F8: INFORMATION without connecting the tester to the vehicle. General operating instructions for the test modes are included in the Common Test Modes OBD, OBD I Systems section.

Note that early model Honda vehicles did not have a Service Check Connector (SCC). To obtain DTCs from these vehicles, it is not necessary to use the SCC jumper. The Information menu will display F5: ECU LOCATION if the SCC jumper is not required, or it will display F2: SCC LOCATION if the SCC jumper is required.

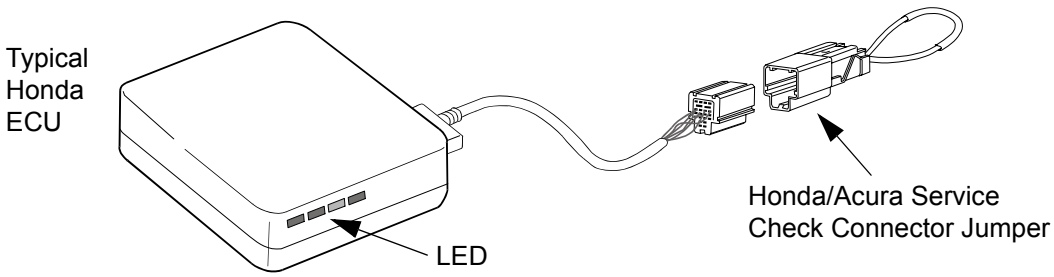
Detailed operating instructions for using Mode F1: DTC ENTRY with Honda vehicles are included in the following procedure.

READING CODES

When Mode F1: DTC ENTRY and F0: HOW TO READ are selected, the tester informs you if the Service Check Connector (SCC) jumper must be connected to the vehicle SCC. The location of the SCC is available by selecting Mode F2: SCC LOCATON from the Information menu. If necessary, connect the jumper to the SCC.

To read DTC codes on Honda vehicles you must locate the ECU and observe the flashing LEDs. If you are not sure where the ECU is located, select Mode F5: ECU LOCATION from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to read the DTCs. Once the DTCs have been read, the tester can define the code. A complete list of Honda DTCs is also included in *HONDA DIAGNOSTIC TROUBLE CODES (DTCs)* on page 15.



MODE F1: DTC ENTRY

When Mode F1: DTC ENTRY is selected, the tester displays five submodes:

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Submode F0: How to Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECM. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the factory service manual for this information, make sure that you are following the correct steps for the system that you are working on.

Submode F1: Enter DTCs

This submode provides you with a text description of the numeric DTC that was entered into the tester. There can be two methods to manually read DTCs from the Honda ECUs. On early Honda ECUs there are 4 LEDs, and on later ECUs there is a single LED.

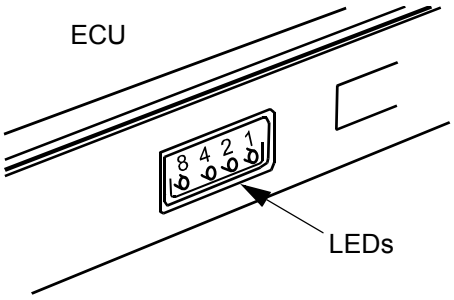
Honda service and repair information indicates that code 0 is supported for OBD systems. Code 0 refers to ECU related failures, and is valid when the engine MIL does not illuminate or will not illuminate for 2 seconds when the ignition is turned on. Refer to the service manual for the current vehicle for further explanation of code 0.

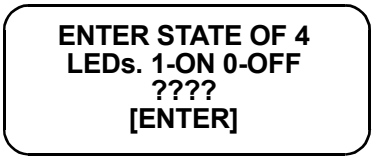
How to enter DTCs for both types is explained on the following pages.

Four LEDs

For Hondas with four LEDs, the Enter DTC(s) mode displays four question marks for entering the DTC. The full screen information tells you that if the LED is ON, then press **1**. If the LED is OFF, then press **0**. Be careful when entering the DTC so that the ECU LED pattern is the same on the tester screen as the ECU. Failure to do so will cause an incorrect DTC description to be displayed. Refer to the following procedure for manually reading 4-LED DTCs on the ECU and entering the number into the tester.

DTC numbers can also be decoded from the LEDs. Each LED has a particular value associated with it. Reading from left to right on the ECU, the values are 8, 4, 2, and 1. If the second and fourth LEDs are ON, that represents a 4 and a 1. Total the values of the ON LEDs and you have the correct DTC. In the example, 4+1=5, so DTC number 5 is set in the engine ECU. Refer to *HONDA DIAGNOSTIC TROUBLE CODES (DTCs)* on page 15 for a definition of the DTC.





To manually read DTCs from early model Honda vehicles that use 4-LEDs on ECU, do the following:

1. Use F5: ECU LOCATION from the Information menu for help in locating the engine ECU.
2. The ECU LEDs are numbered 8, 4, 2, and 1 as read from left to right.
3. Turn ignition key to ON.
4. Watch the LEDs on the ECU and note which LED is ON.

5. Use F1: ENTER DTCs and if the LED is ON, press 1 on the tester keypad. If the LED is OFF, press 0 on the tester keypad.

NOTE

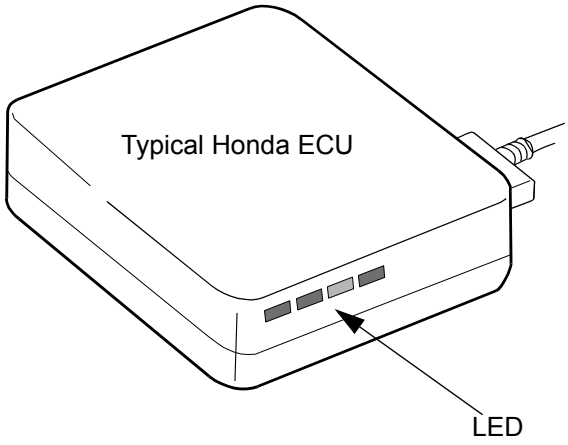
Reading the ECU LEDs from left to right, the LEDs indicate ON, OFF, ON, OFF. Press 0, 1, 0, and 1 into the tester, then press ENTER.

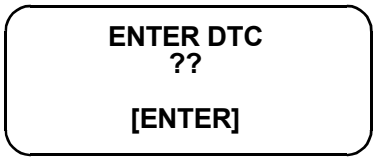
OFF ON OFF ON

6. The resulting code appears on the tester, along with a brief description.
7. Use F4: CLEAR DTCs for DTC clear code information.
8. Turn ignition key off when diagnosis is finished.

One LED

For Hondas with a single LED, the Enter DTC(s) submode displays two question marks for entering the DTC. The tester screen prompts you to enter the DTCs read off the ECU LED or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the ECU LED or MIL, then enter the DTC into the tester. Incorrect ECU LED or MIL interpretation can cause the wrong DTC description to be displayed. Refer to the following procedure for manually reading 1-LED DTCs on the ECU.





To manually read DTCs from late model Honda vehicles that use 1-LED on ECU, or 1-LED on ECU and dashboard MIL, do the following:

1. The MIL and the ECU mounted LED can be used to read DTCs from the ECU.
2. Use F2: SCC LOCATION from the Information menu for help in locating the Service Check Connector (SCC) or F5: ECU LOCATION from the Information menu for help in locating the engine electronic control module.
3. If required, connect the Honda/Acura Code jumper (P/N 02001935) into the SCC.
4. Turn the ignition key to RUN.
5. The MIL and the ECU LED will flash DTCs, if stored in ECU memory.
6. The 10's digit corresponds to a long pulse, and the 1's digit corresponds to a short pulse.
7. Use F1: ENTER DTCs and type manually read DTCs into the tester (or select it from F2: DTC LIST).
8. The resulting code will appear on the tester, along with a brief description.

9. If used, remove the Honda/Acura Code jumper from the SCC.
10. Use F4: CLEAR DTCs for DTC clear code information.
11. Turn ignition key off when diagnosis is finished.

NOTE

For further information, refer to the Factory Service Manual for the vehicle you are testing.

Submode F2: DTC List

This submode provides you with a text description of the numeric DTC that was selected on the tester display screen. As you scroll through the available DTCs you can select the DTC that matches the DTC output by the ECU. After you perform this step, simply select the DTC on the tester screen for later review or printing.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to choose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory of DTCs that you entered or selected in the tester.

7. HONDA DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Honda vehicles are listed in the following tables.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

YEAR: 1995	DTC NO.	DESCRIPTOR
1985	0	FAULTY ECU OR MIL CIRCUIT
	1	O2S OR O2S CIRCUIT FAILURE
	2	FAULTY ECU
	3	MAP SENSOR OR MAP CKT FAILURE
	4	FAULTY ECU
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CKP SENSOR OR CKP CIRCUIT FAIL
	9	CKP SENSOR OR CKP CIRCUIT FAIL
	10	IAT SENSOR OR IAT CKT FAILURE
	11	IDLE MIXTURE ADJ SENSOR/CKT FAIL
	12	EGR SYSTEM OR EGR CKT FAILURE FAULTY ECU
	13	BARO SENSOR OR BARO CKT FAILURE
	14	FAULTY ECU
	15	FAULTY ECU

YEAR: 1986	DTC NO.	DESCRIPTOR
1986	0	FAULTY ECU OR ECU CKT FAILURE
	1	FAULTY O2S OR FAULTY FUEL SYS. O2S OR O2S CIRCUIT FAILURE
	2	FAULTY ECU OR ECU CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	FAULTY ECU OR ECU CKT FAILURE

YEAR: 1986	DTC NO.	DESCRIPTOR
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CKP SENSOR OR CKP CIRCUIT FAIL
	9	CKP SENSOR OR CKP CIRCUIT FAIL
	10	IAT SENSOR OR IAT CKT FAILURE
	11	FAULTY ECU OR ECU CKT FAILURE IDLE MIXTURE ADJ SENSOR/CKT FAIL
	12	EGR SYSTEM OR EGR CKT FAILURE FAULTY ECU OR ECU CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	FAULTY ECU OR ECU CKT FAILURE
	15	FAULTY ECU OR ECU CKT FAILURE

YEAR: 1987	DTC NO.	DESCRIPTOR
1987	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2S OR O2S CIRCUIT FAILURE SHT CKT IN FREQ SOLENOID VALVE B
	2	FAULTY ECU OR ECU CKT FAILURE SHT CKT IN FREQ SOLENOID VALVE A
	3	MAP SENSOR OR MAP CKT FAILURE
	4	FAULTY ECU OR ECU CKT FAILURE IGNITION TIMING CONTROL UNIT
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CRANK ANGLE SENSOR - (TDC) CKP SENSOR OR CKP CIRCUIT FAIL CKT FAILURE IN IGNITION WIRE
	9	CRANK ANGLE SENSOR - (CYL) CK ANGLE OR CK ANG. CKT FAILURE
	10	IAT SENSOR OR IAT CKT FAILURE
	11	FAULTY ECU OR ECU CKT FAILURE IDLE MIXTURE ADJ SENSOR/CKT FAIL

YEAR: 1987	DTC NO.	DESCRIPTOR
	12	EGR SYSTEM OR EGR CKT FAILURE FAULTY ECU OR ECU CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	FAULTY ECU OR ECU CKT FAILURE
	15	FAULTY ECU OR ECU CKT FAILURE

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR A OR O2S A CKT FAIL O2S OR O2S CIRCUIT FAILURE
	2	O2 SENSOR B OR O2S B CKT FAIL VSS OR VSS CIRCUIT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CKP SENSOR OR CKP CIRCUIT FAIL VAC. SWITCH OR VAC. SWITCH CKT
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CRANK ANGLE SENSOR - (TDC) IGNITION COIL SYS. OR CKT FAIL
	9	CRANK ANGLE SENSOR - (CYL) NO.1 CYLINDER POS. SENSOR
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL FAILURE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	19	LOCK-UP CONTROL SOL. VALVE
	20	ELECTRIC LOAD SENSOR

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	0	ECU FAULTY OR ECU CKT FAILURE
	1	O2 SENSOR A OR O2S A CKT FAIL O2S OR O2S CIRCUIT FAILURE
	2	O2 SENSOR B OR O2S B CKT FAIL VSS OR VSS CIRCUIT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CKP SENSOR OR CKP CIRCUIT FAIL VAC. SWITCH OR VAC. SWITCH CKT
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CRANK ANGLE SENSOR - (TDC) IGNITION COIL SYS. OR CKT FAIL
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	11	FAULTY ECU OR ECU CKT FAILURE
	12	EGR SENSOR OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL FAILURE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	19	LOCK-UP CONTROL SOL. VALVE
	20	ELECTRIC LOAD SENSOR

YEAR:1990	DTC NO.	DESCRIPTOR
1990	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE O2 SENSOR A OR O2S A CKT FAIL
	2	VSS OR VSS CIRCUIT FAILURE O2 SENSOR B OR O2S B CKT FAIL
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CKP SENSOR OR CKP CIRCUIT FAIL VAC. SWITCH OR VAC. SWITCH CKT FAULTY ECU OR ECU CKT FAILURE
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE M/T-COOLANT SW. A/T-SHFT POS. SW
	8	CRANK ANGLE SENSOR - (TDC) IGNITION COIL SYS. OR CKT FAIL
	9	CRANK ANGLE SENSOR - (CYL) CK ANGLE SENSOR CYL (HF & Si)
	10	IAT SENSOR OR IAT CKT FAILURE
	11	ELECTRONIC IDLE CONTROL FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE EGR SYSTEM FAIL (HF & Calif. AT)
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL FAILURE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	19	LOCK-UP CONTROL SOL. VALVE
	20	ELECTRIC LOAD SENSOR
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	41	O2S HEATER OR O2S HEATER CKT
	42	FUEL SUPPLY SYSTEM
	43	FUEL SUPPLY SYSTEM

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2S OR O2S CIRCUIT FAILURE O2 SENSOR A OR O2S A CKT FAIL
	2	VSS OR VSS CIRCUIT FAILURE O2 SENSOR B OR O2S B CKT FAIL
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CKP SENSOR OR CKP CIRCUIT FAIL VAC. SWITCH OR VAC. SWITCH CKT FAULTY ECU OR ECU CKT FAILURE
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE M/T-COOLANT SW. A/T-SHFT POS. SW
	8	CRANK ANGLE SENSOR - (TDC) IGNITION COIL SYS. OR CKT FAIL
	9	CRANK ANGLE SENSOR - (CYL) CK ANGLE SENSOR CYL (HF & Si)
	10	IAT SENSOR OR IAT CKT FAILURE
	11	ELECTRONIC IDLE CONTROL FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE EGR SYSTEM FAIL (HF & Calif. AT)
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL FAILURE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	19	LOCK-UP CONTROL SOL. VALVE
	20	ELECTRIC LOAD SENSOR
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	41	O2S HEATER OR O2S HEATER CKT
	43	FUEL SUPPLY SYSTEM

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	0	FAULTY ECU OR ECU CKT FAILURE
	1	O2 SENSOR OR O2S CKT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CKP SENSOR OR CKP CIRCUIT FAIL
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAIL
	14	ELECTRONIC IDLE CONTROL FAILURE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	19	A/T LOCK-UP SOL. VALVE A/B
	20	ELECTRIC LOAD SENSOR
	21	SPOOL SOLENOID VALVE
	22	VALVE TIMING OIL PRESSURE SWITCH
	23	KNOCK SENSOR OR KS CIRCUIT FAIL
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	41	O2S HEATER OR O2S HEATER CKT
	43	FUEL SUPPLY SYSTEM
	48	LAF SENSOR OR LAF CKT FAILURE

YEAR:1993	DTC NO.	DESCRIPTOR
1993	0	FAULTY ECU OR ECU CKT FAILURE
	1	HO2S OR HO2S CIRCUIT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CKP SENSOR OR CKP CIRCUIT FAIL
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL FAILURE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	19	A/T LOCK-UP SOL. VALVE A/B
	20	ELECTRIC LOAD SENSOR
	21	VTEC SOLENOID VALVE
	22	VTEC PRESSURE SWITCH
	23	KNOCK SENSOR OR KS CIRCUIT FAIL
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	41	HO2S HEATER OR CIRCUIT FAILURE
	43	FUEL SUPPLY SYSTEM
	48	HO2S [CIVIC D15Z1 (EXCEPT CA)]

YEAR:1994	DTC NO.	DESCRIPTOR
1994	0	FAULTY ECU OR ECU CKT FAILURE
	1	HO2S OR HO2S CIRCUIT FAILURE
	3	MAP SENSOR OR MAP CKT FAILURE
	4	CKP SENSOR OR CKP CIRCUIT FAIL
	5	MAP SENSOR OR MAP CKT FAILURE
	6	ECT SENSOR OR ECT CKT FAILURE
	7	TP SENSOR OR TPS CIRCUIT FAILURE
	8	CRANK ANGLE SENSOR - (TDC)
	9	CRANK ANGLE SENSOR - (CYL)
	10	IAT SENSOR OR IAT CKT FAILURE
	12	EGR SYSTEM OR EGR CKT FAILURE
	13	BARO SENSOR OR BARO CKT FAILURE
	14	ELECTRONIC IDLE CONTROL FAILURE
	15	IGNITION OUTPUT SIG. OR CKT FAIL
	16	FUEL INJECTOR FAILURE
	17	VSS OR VSS CIRCUIT FAILURE
	19	A/T LOCK-UP SOL. VALVE A/B
	20	ELECTRIC LOAD SENSOR
	21	VTEC SOLENOID VALVE
	22	VTEC PRESSURE SWITCH
	23	KNOCK SENSOR OR KS CIRCUIT FAIL
	30	A/T FI SIGNAL A
	31	A/T FI SIGNAL B
	41	HO2S HEATER OR CIRCUIT FAILURE
	43	FUEL SUPPLY SYSTEM
	48	HO2S [CIVIC D15Z1 (EXCEPT CA)]

HYUNDAI

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1. VEHICLES AND SYSTEMS

Using the Asian cartridge, the following Hyundai vehicles can be diagnosed.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1989					
SONATA	2.4L I4	G4AS	MPI	CHECK	AUTOCODES
SONATA	3.0L V6	G6AT	MPI	CHECK	AUTOCODES

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1990					
EXCEL	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
SONATA	2.4L I4	G4AS	MPI	CHECK	AUTOCODES
SONATA	3.0L V6	G6AT	MPI	CHECK	AUTOCODES

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1991					
EXCEL	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
SCOUPE	1.5L I4	G4DJ	MPI	CHECK	AUTOCODES
SONATA	2.4L I4	G4AS	MPI	CHECK	AUTOCODES
SONATA	3.0L V6	G6AT	MPI	CHECK	AUTOCODES

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1992					
ELANTRA	1.6L I4	G4DR	MPI	CHECK	AUTOCODES
EXCEL	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
SCOUPE	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
SONATA	2.0L I4	G4AF	MPI	CHECK	AUTOCODES
SONATA	3.0L V6	G6AT	MPI	CHECK	AUTOCODES

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1993					
ELANTRA	1.6L I4	G4DR	MPI	CHECK	AUTOCODES
ELANTRA	1.8L I4	G4DM	MPI	CHECK	AUTOCODES
EXCEL	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
SCOUPE	1.5L I4	G4AE	MPI	NONE	MIL CODES
SONATA	2.0L I4	G4AP	MPI	CHECK	AUTOCODES
SONATA	3.0L V6	G6AT	MPI	CHECK	AUTOCODES

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1994					
ELANTRA	1.6L I4	G4DR	MFI	CHECK	AUTOCODES
ELANTRA	1.8L I4	G4DM	MFI	CHECK	AUTOCODES
EXCEL	1.5L I4	G4AJ	MFI	CHECK	AUTOCODES
SCOUPE	1.5L I4	G4AE	MFI	NONE	MIL CODES
SONATA	2.0L I4 DOHC	G4AP	MFI	CHECK	AUTOCODES
SONATA	3.0L V6	G6AT	MPI	CHECK	AUTOCODES

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1995					
ACCENT	1.5L I4	G4EK	MFI	NONE	MILCODES
ELANTRA	1.5L I4	G4DJ	MFI	CHECK	AUTOCODES
ELANTRA	1.6L I6	G4DR	MFI	CHECK	AUTOCODES
ELANTRA	1.8L I4	G4DN	MFI	CHECK	AUTOCODES
SCOUPE	1.5L I4	G4AE	MFI	NONE	MILCODES
SONATA	2.0L I4	G4AP	MFI	CHECK	AUTOCODES
SONATA	3.0L V6	G6AT	MFI	CHECK	AUTOCODES

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1996					
ACCENT	1.5L I4	G4EK	MFI	OBD II*	AUTOCODES
ELANTRA	1.8L I4	G4DM	MFI	OBD II*	AUTOCODES
SONATA	2.0L I4	G4AP	MFI	OBD II*	AUTOCODES
SONATA	3.0L V6	G6AT	MFI	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1997					
ACCENT	1.5L I4 SOHC	G4EK	MFI	OBD II*	AUTOCODES
ACCENT	1.5L I4 DOHC	G4EK	MFI	OBD II*	AUTOCODES
ELANTRA	1.8L I4 DOHC	G4DM	MFI	OBD II*	AUTOCODES
SONATA	2.0L I4 DOHC	G4AP	MFI	OBD II*	AUTOCODES
SONATA	3.0L V6 SOHC	G6AT	MFI	OBD II*	AUTOCODES
TIBURON	1.8L I4 DOHC	G4GM	MFI	OBD II*	AUTOCODES
TIBURON	2.0L I4 DOHC	G4GF	MFI	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1998					
ACCENT	1.5L I4 SOHC	G4EK	MFI	OBD II*	AUTOCODES
ACCENT	1.5L I4 DOHC	G4EK	MFI	OBD II*	AUTOCODES
ELANTRA	1.8L I4 DOHC	G4GM	MFI	OBD II*	AUTOCODES
SONATA	2.0L I4 DOHC	G4AP	MFI	OBD II*	AUTOCODES
SONATA	3.0L V6 SOHC	G6AT	MFI	OBD II*	AUTOCODES
TIBURON	1.8L I4 DOHC	G4GM	MFI	OBD II*	AUTOCODES
TIBURON	2.0L I4 DOHC	G4GF	MFI	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

2. HYUNDAI SPECIFIC INFORMATION

The Hyundai vehicles covered by the Asian Imports Cartridge are separated into two different sections within the Asian Imports Operator's Manual. The vehicle's on-board system will determine which section of the Operator's Manual will need to be used. Vehicles that are OBD II certified have information about the operating test modes in the Common Test Modes OBD II Systems section of the Operator's Manual. Vehicles that have OBD or OBDI systems have test mode information described in this section of the Operator's Manual. In these sections, you will find information on test modes available, how to connect the tester to the vehicle, and operating instructions for the different test modes. A complete list of Hyundai Diagnostic Trouble Codes is included at the back of each section.

To determine which section of the Operator's Manual to use for diagnostic information and instructions, look at Adapter Type of the Vehicle and Systems chart. If the vehicle you are testing has an OBD II adapter type, use the Common Test Modes OBD II Systems section of the Operator's Manual. If the vehicle you are testing does not have the OBD II Adapter Type, use this section to diagnose the vehicle under test.

3. TEST MODES AVAILABLE

The following test modes are available when testing Hyundai vehicles. Operating instructions for test modes other than F1: DTC Entry and F2: DTC are included in the Common Test Modes OBD, OBD I Systems section. There are Hyundai specific instructions for operating the test modes in Section 6 (Test Modes).

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F2: DTC

SUBMODE F1: READ DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

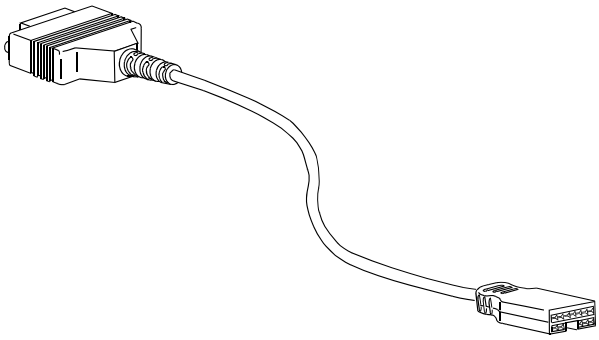
SUBMODE F1: DLC LOCATION[1]
SUBMODE F3: ID INFO
SUBMODE F4: DJC LOCATION[1]

1. Note that not all models support DJC, or DLC Location test modes. The Tester will automatically choose which test mode to display, depending on your vehicle selection.

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Hyundai vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Refer to the chart in Section 1 to see if the vehicle you are testing requires the Check Adapter Cable. If so, connect the Mitsubishi/Chrysler Imports/Hyundai Check Adapter Cable to the end of the DLC cable, then connect the yellow connector end to the vehicle Check connector.



Mitsubishi/Chrysler Imports/Hyundai
CHECK ADAPTER CABLE

3. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery clip adapter (P/N 02001636).

NOTE	
	Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery clip adapter.

4. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester stand-alone display

5. If the display is correct, press ENTER. If the display is not correct, refer to Appendix D.
6. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite Hyundai.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Select Model menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE AND ENGINE TYPE

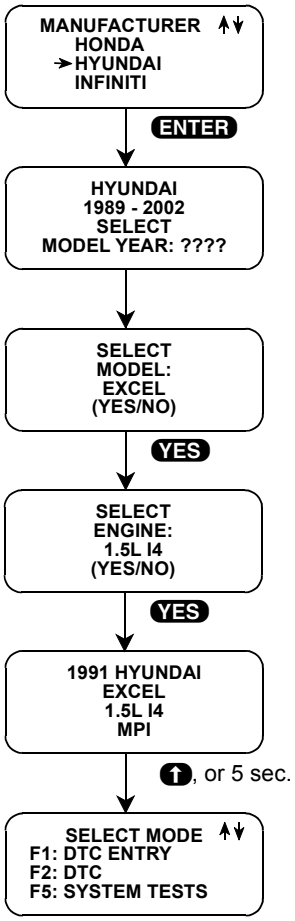
Next, the Select Engine menu is displayed. Press NO until the engine and engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to Section 6 (Test Modes) and the Common Test Modes OBD, OBD I Systems sections for instructions on operating the test modes with Hyundai vehicles.



HYUNDAI VEHICLE SELECTION

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
EXIT	Return to previous display.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Hyundai vehicles may be selected. You may select Modes F1: DTC Entry, F2: DTC, F5: System Tests, and F8: Information without connecting the tester to the vehicle. Operating instructions for Modes F1: DTC Entry and F2: DTCs are included in this section.

READING CODES

Detailed operating instructions for using Modes F1: DTC Entry and F2: DTC with Hyundai vehicles are included in the following procedure. F1: DTC Entry is displayed for all Hyundai vehicles, and F2: DTC is displayed for Hyundai vehicles that have "AUTOCODES" as the Code Type listed in the Vehicles and Systems table.

NOTE

Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

MODE F1: DTC ENTRY

When Mode F1: DTC Entry is selected, the tester displays submodes which, after your selection, can provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

DTC ENTRY SUBMODES:

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

MANUALLY READING DTCS

To manually read Diagnostic Trouble Codes (DTCs) on Hyundai vehicles from 1989-95, there are 2 methods that can be used. The most common method requires an analog voltmeter. Using the analog voltmeter set to a 20 volt scale and connected to the Data Link Connector (DLC), the DTC can be interpreted from the analog voltmeter needle flashes. The second method requires the use of a single wire jumper that is intermittently placed across one pin of the DLC and ground to flash DTCs out on the dashboard mounted Malfunction Indicator Lamp (MIL).

For the automobile manufacturers that mention the use of an analog voltmeter to read manual DTCs, the Mastertech Oscilloscope may be used. Set up the single channel oscilloscope and make connections the same way as the analog voltmeter (above). Choose the 20v/division scale and a slow time/division (e.g. 1-2 sec/division).

the DTCs will be shown as a waveform on the display.

Note that manually retrieving DTCs from 1993-95 Hyundai Scoupe requires you to locate and jumper the Diagnostic Connector, then watch the instrument panel MIL. Refer to the section on manually reading DTCs from the 1993-95 Hyundai vehicles in this section.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the ECU, the tester can define the code. A complete list of Hyundai DTCs is also included in Chapter 7.

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the manual for this information, make sure that you are following the correct steps for the system that you are working on.

Submode F1: Enter DTC(s)

On Hyundai vehicles, the Enter DTCs submode allows you to enter manually read DTCs. This submode provides you with a text description of the numeric DTC that was entered into the tester.

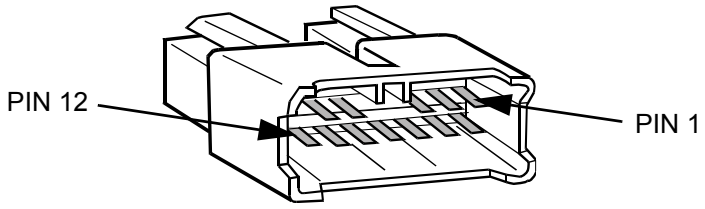
The Enter DTC Submode displays two question marks for DTC Entry. The tester screen prompts you to enter the DTCs read from the analog voltmeter. Be careful when reading DTCs from the analog voltmeter. Incorrect voltmeter needle interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section.

Hyundai service and repair information indicates that code 0 is supported for OBD systems. Code 0 refers to ECU-related failures, and is valid when the engine MIL does not illuminate or will not illuminate for 2 seconds when turning ignition on. Refer to the service manual for the current vehicle for further explanation of code 0.

Refer to the appropriate procedure for manually reading analog voltmeter and MIL ECU DTCs on the following pages.

Manually reading DTCs from Hyundai vehicles that use 12 pin DLC and analog voltmeter:

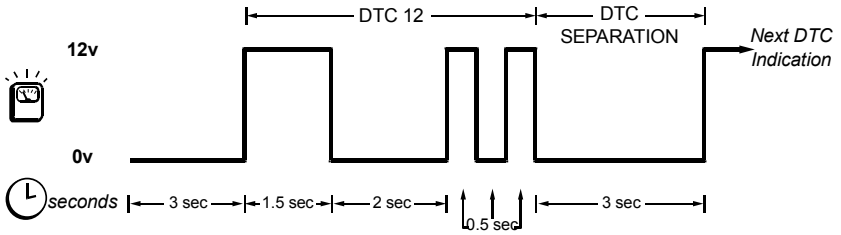
1. Locate the 12 pin Diagnostic Connector. (Use F1: DLC Location, or F4: DJC Location from the Information menu for help on diagnostic connector location.)
2. Connect analog voltmeter red lead to pin 1 diagnosis terminal and voltmeter black lead to pin 12 (ground) terminal of diagnosis connector. Set analog voltmeter to 20 volt scale.



3. Turn ignition switch to ON.

4. DTC indication will begin on voltmeter.

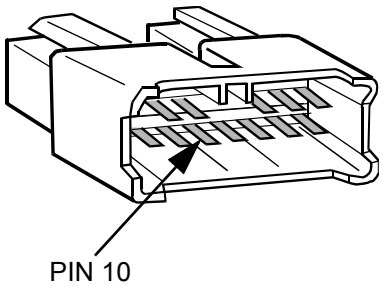
   Voltmeter will fluctuate 0 volts to 12 volts if DTCs are stored in the ECU. If a DTC is stored in the ECU, the first number of 12 volt, 1.5 second indications will equal the 10's digit of a 2-digit DTC. After a 2.0 second pause, the second number of 12 volt, 0.5 second indications will equal the 1's digit. DTCs are separated by 0 volt indication for 3.0 seconds.



5. If no malfunctions are present, meter will read 12 volts once per second.
6. After recording DTCs turn ignition switch off.
7. Disconnect voltmeter leads.
8. Erase DTCs when all repairs are completed.

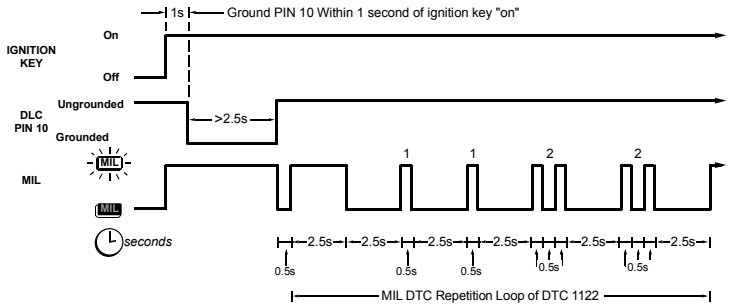
Manually reading DTCs from 1993-95 Hyundai Scoupe using instrument panel malfunction indicator lamp (MIL):

1. Locate the 12 pin Diagnostic Connector. (Use F4: DJC Location from the Information menu for help on diagnostic connector location.)
2. Turn ignition key ON, do not start engine.
3. Within 1 second of key ON, ground pin 10 of the diagnostic connector for 2.5 seconds (the jumper configuration best suited for this operation is a double-ended alligator type [with small jaw], about 3 feet long).



4. Observe the Malfunction Indicator Lamp (MIL) to read DTCs. The first MIL output is either the stored DTC or the "no fault detected" DTC (MIL flashes 4-4-4-4). In the case of more than one DTC stored in ECU, each individual DTC is repeated infinitely until pin 10 is grounded again.

   MIL will turn ON/OFF if DTCs are stored in ECU after pin 10 is grounded. If a DTC is stored in ECU, MIL digit flashes are indicated by 0.5 second pulses. MIL digit flashes are separated by a MIL "off" 2.5 second pause.



5. Ground the pin 10 again for 2.5 seconds. The next DTC will be displayed on the MIL. Keep grounding pin 10 until all DTCs are read and the last output is "end of output" DTC (MIL flashes 3-3-3-3).
6. If no malfunctions are present, MIL will flash 4-4-4-4.
7. After recording DTCs turn ignition switch off.
8. Disconnect jumper leads.
9. Erase DTCs when all repairs are completed.

NOTE

On certain Hyundai vehicles, the instrument panel MIL will flash out four-digit DTCs. When four-digit DTCs are manually read from the engine ECU, use F2: DTC LIST (instead of F1: ENTER DTC(s) to select DTCs flashed on the MIL. The F2: DTC LIST mode displays both the four-digit and the corresponding two-digit DTC.

DTC 23 (3145)
ECT SENSOR OR
CKT FAILURE

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter as an alternative to entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter or MIL. You can "Select" the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to choose. Option F0 is a series of instructions screens which inform you how to clear DTC(s) from the ECU. This is performed by tester keypad presses. Option F1 clears DTCs

from the tester's memory that you entered or selected. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

MODE F2: DTC

To read DTCs on 1989-95 vehicles you will need to locate the vehicle DLC and connect the Hyundai Check Adapter to the tester and vehicle.

To locate the DLC, select F1: DLC Location from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

When Mode F2: DTC is selected, the tester displays four submodes:

DTC SUBMODES:

F1: READ DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Submode F1: Read DTC(s)

This submode provides automated DTC retrieval from the vehicle ECU. Step by step screen instructions guide you to connect the YELLOW Mitsubishi/Chrysler Imports/Hyundai Check adapter to the vehicle DLC and start and warm the engine to normal operating temperature. This is performed by following the tester instruction screens. If you have trouble, additional F1: READ DTC(s) retrieval information is described on the next page.

This submode is available for all 1989-95 Hyundai vehicles, excluding 1993-95 Scoupe. If you are unsure of the Read DTC test application, check the code type column in the Hyundai Vehicle Coverage table (found at the beginning of this section). If the Code Type column indicates "Autocodes", then the vehicle supports F1: READ DTC(s).

NOTE

When reading DTCs from Hyundai vehicles make sure the engine is at normal operating temperature and testing is performed in a well-ventilated area.

Reading DTCs from 1989-1995 Hyundai ECUs using the F1: Read DTCs mode in Asian Imports cartridge:

1. Insert Asian cartridge into MASTERTECH or TECH 1A,
2. Connect Hyundai Check adapter (Yellow) to DLC.
3. Connect the Check adapter to the vehicle DLC. Press F1: DLC location from the Information menu for Data Link Connector location assistance.
4. Power MASTERTECH or TECH 1A with 12v power cable.
5. Select Hyundai vehicle to test.
6. Press F2: DTCs from Hyundai test mode menu.
7. Press F1: READ DTCs submode from DTC test menu. Follow instructions on the tester display.

8. Tester will automatically command the vehicle ECU into the correct mode required to read DTCs, and will display all received DTCs on the tester display.

NOTE

On certain Hyundai vehicles, the instrument panel MIL flashes out four-digit DTCs. When DTCs are automatically read from the engine ECU with the tester, DTCs are displayed on the tester as two digit. The DTC display screen using this method will have both the two digit and four digit DTCs (four digit DTC in parentheses). For more information on 2 and 4 digit DTCs, refer to the factory service manual.

DTC 23 (3145)
ECT SENSOR OR
CKT FAILURE

Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter or MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter or MIL. You can "Select" the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTC's that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option 1 is to view text screens that provide information on how to clear the DTCs from ECU memory. Option 2 clears the tester memory from DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

7. HYUNDAI DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Hyundai vehicles are listed in the following charts.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD I SYSTEMS

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SWITCH OR CKT
	21	ECT SENSOR OR CKT FAILURE
	22	CRANK ANGLE SENSOR OR CKT
	23	NO.1 CYL DTC SENSOR OR CKT
	24	VSS OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	41	FUEL INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR

YEAR: 1990	DTC NO.	DESCRIPTOR
1990	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SWITCH OR CKT

YEAR: 1990 (CONTINUED)	DTC NO.	DESCRIPTOR
	21	ECT SENSOR OR CKT FAILURE
	22	CRANK ANGLE SENSOR OR CKT
	23	NO.1 CYL TDC SENSOR OR CKT
	24	VSS OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	41	FUEL INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SWITCH OR CKT
	21	ECT SENSOR OR CKT FAILURE
	22	CRANK ANGLE SENSOR OR CKT
	23	NO.1 CYL TDC SENSOR OR CKT
	24	VSS OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	41	FUEL INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE

YEAR: 1992 (CONTINUED)	DTC NO.	DESCRIPTOR
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SWITCH OR CKT
	21	ECT SENSOR OR CKT FAILURE
	22	CRANK ANGLE SENSOR OR CKT
	23	NO.1 CYL TDC SENSOR OR CKT TDC SENSOR OR CKT FAILURE
	24	VSS OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	41	FUEL INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGNITION SIGNAL OR CKT FAILURE

YEAR: 1993	DTC NO.	DESCRIPTOR
1993	0	ECU OR CIRCUIT FAILURE
	11	FRONT O2 SENSOR OR CKT FAILURE O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE ECU OR CIRCUIT (ROM FAILURE)
	14	TP SENSOR OR TPS CKT FAILURE ECU OR CIRCUIT (RAM FAILURE)
	15	MOTOR POSITION SWITCH OR CKT
	16	ECU OR CIRCUIT (ROM/RAM FAIL)
	17	ECU FAILURE-KNOCK CONTROL
	19	ECU FAILURE KNOCK EVAL CKT
	21	ECT SENSOR OR CKT FAILURE O2 SENSOR OR CKT FAILURE
	22	CRANK ANGLE SENSOR OR CKT MAF SENSOR OR CIRCUIT FAILURE
	23	NO.1 CYL TDC SENSOR OR CKT TDC SENSOR OR CKT FAILURE ECT SENSOR OR CKT FAILURE

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	24	SPEED SENSOR OR CKT FAILURE CAMSHAFT POSIT. SENSOR OR CKT
	25	BARO SENSOR OR CKT FAILURE CRANK ANGLE SENSOR OR CKT
	26	TP SENSOR OR TPS CKT FAILURE
	27	KS OR KS CIRCUIT FAILURE
	29	SPEED SENSOR OR CKT FAILURE
	31	BATTERY VOLTAGE OR ALTERNATOR
	33	A/C COMPRESSOR OR CKT FAILURE
	36	BOOST SENSOR FAILURE (HIGH)
	37	BOOST SENSOR CNTRL DEV. FAULT
	38	BOOST CONTROL VALVE FAILURE
	39	BOOST PRESSURE SENSOR FAILURE
	41	FUEL INJECTOR OR CKT FAILURE NO.1 INJECTOR OR CIRCUIT FAILURE
	42	FUEL PUMP OR CKT FAILURE NO.2 INJECTOR OR CIRCUIT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR NO.3 INJECTOR OR CIRCUIT FAILURE
	44	IGNITION SIGNAL OR CKT FAILURE NO.4 INJECTOR OR CIRCUIT FAILURE
	45	PURGE CNTRL SOL. VALVE OR CKT
	47	ISC ACTUATOR FAILURE(OPENING)
	48	ISC ACTUATOR FAILURE(CLOSING)
	53	FUEL PUMP OR CKT FAILURE
	59	REAR O2 SENSOR OR CKT FAILURE
	61	ECU FAILURE-INJ. OR PURGE SOL.
	62	ECU FAILURE-IDLE ACT. OR A/C RLY
	63	ECU FAILURE DRIVING CKT A
	65	ECU FAILURE-INJ PCV ISA A/C RLY
	69	ECU FAILURE DRIVING CKT B
	81	AIR/FUEL CONTROL FAILURE
	82	A/F ADAPTIVE FAILURE-MULTIP.
	83	A/F ADAPTIVE FAILURE A/N

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	84	A/F ADAPTIVE FAILURE-ADDITIVE

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	0	ECU OR CIRCUIT FAILURE
	11	FRONT HEATED O2 SENSOR OR CKT HEATED O2 SENSOR OR CKT FAILURE O2 SENSOR OR CKT FAILURE
	12	VOLUME AIR FLOW SENSOR OR CKT
	13	IAT SENSOR OR CKT FAILURE ECU OR CIRCUIT (ROM FAILURE)
	14	TP SENSOR OR TPS CKT FAILURE ECU OR CIRCUIT (RAM FAILURE)
	15	MOTOR POSITION SENSOR OR CKT
	16	ECU OR CIRCUIT (ROM/RAM FAIL)
	17	ECU FAILURE-KNOCK CONTROL
	19	ECU FAILURE KNOCK EVAL CKT
	21	ECT SENSOR OR CKT FAILURE O2 SENSOR OR CKT FAILURE
	22	CRANK ANGLE SENSOR OR CKT MAF SENSOR OR CIRCUIT FAILURE
	23	CAMSHAFT POSIT. SENSOR OR CKT ECT SENSOR OR CKT FAILURE
	24	VSS OR CIRCUIT FAILURE CAMSHAFT POSIT. SENSOR OR CKT
	25	BARO SENSOR OR CKT FAILURE CRANK ANGLE SENSOR OR CKT
	26	TP SENSOR OR TPS CKT FAILURE
	27	KS OR KS CIRCUIT FAILURE
	29	VEHICLE SPEED OR CIRCUIT
	31	BATTERY VOLTAGE OR ALTERNATOR
	33	A/C COMPRESSOR OR CKT FAILURE
	36	ECM MAP SENSOR FAILURE (HIGH)
	37	ECM MAP SENSOR CNTRL DEV. FAULT
	38	ECM MAP SENSOR CNTRL VALVE

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	39	ECM MAP SENSOR PRESSURE SNSR
	41	FUEL INJECTOR OR CKT FAILURE NO.1 INJECTOR OR CIRCUIT FAILURE
	42	FUEL PUMP OR CKT FAILURE NO.2 INJECTOR OR CIRCUIT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR NO.3 INJECTOR OR CIRCUIT FAILURE
	44	IGNITION SIGNAL OR CKT FAILURE NO.4 INJECTOR OR CIRCUIT FAILURE
	45	PURGE CNTRL SOL. VALVE OR CKT
	47	ISC ACTUATOR FAILURE(OPENING)
	48	ISC ACTUATOR FAILURE(CLOSING)
	53	FUEL PUMP OR CKT FAILURE
	59	REAR HEATED O2 SENSOR OR CKT
	61	ECU FAILURE-INJ. OR PURGE SOL.
	62	ECU FAILURE-IDLE ACT. OR A/C RLY
	63	ECU FAILURE DRIVING CKT A
	65	ECU FAILURE-INJ PCV ISA A/C RLY
	69	ECU FAILURE DRIVING CKT B
	81	AIR/FUEL CONTROL FAILURE
	82	A/F ADAPTIVE FAILURE-MULTIP.
	83	A/F ADAPTIVE FAILURE A/N
	84	A/F ADAPTIVE FAILURE-ADDITIVE

YEAR: 1995	DTC NO.	DESCRIPTOR
1995	0	ECM INTERNAL FAILURE
	11	FRONT HO2S OR CKT FAILURE
	12	VOL. AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE (ALL EXCEPT ACCENT/SCOUPE)
	13	ECM INTERNAL FAILURE (ACCENT/SCOUPE)
	14	TPS OR CKT FAILURE
	21	ECT OR CKT FAILURE (EXCEPT ACCENT/SCOUPE)

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	21	HO2S OR CKT FAILURE (ACCENT/SCOUPE)
	22	CRANK POSITION SENSOR OR CKT FAILURE (ALL EXCEPT ACCENT/SCOUPE)
	22	MAF SENSOR OR CKT FAILURE (ACCENT/SCOUPE)
	23	CAM POSITION SENSOR OR CKT FAILURE (ALL EXCEPT ACCENT/SCOUPE)
	23	ECT SENSOR OR CKT FAILURE (ACCENT/SCOUPE)
	24	VSS/REED SWITCH OR CKT FAILURE (ALL EXCEPT ACCENT/SCOUPE)
	24	CAM POSITION SENSOR OR CKT FAILURE (ACCENT/SCOUPE)
	25	BARO SENSOR OR CKT FAILURE (ALL EXCEPT ACCENT/SCOUPE)
	25	CRANK POSITION SENSOR OR CKT FAILURE (ACCENT/SCOUPE)
	26	TPS OR CKT FAILURE
	27	KNOCK SENSOR OR CKT FAILURE
	29	VSS OR CKT FAILURE
	31	INCORRECT BATTERY VOLTAGE DETECTED
	33	A/C SWITCH OR RELAY FAILURE
	36	HI BOOST-CHECK WASTEGATE CONTROL SYSTEM
	37	WASTE GATE CONTROL SOL/VAC FAILURE
	38	WASTE GATE CONTROL SOL CKT FAILURE
	41	FUEL INJECTOR OR CKT FAILURE
	41	NO 1 INJECTOR FAILURE (ACCENT/SCOUPE)
	42	FUEL PUMP OR CKT FAILURE
	42	NO 2 INJECTOR FAILURE (ACCENT/SCOUPE)
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR (ALL EXCEPT ACCENT/SCOUPE)
	43	NO 3 INJECTOR FAILURE (ACCENT/SCOUPE)
	44	IGNITION COIL/TRANSISTOR OR CKT FAILURE (ALL EXCEPT ACCENT/SCOUPE)
	44	NO 4 INJECTOR (ACCENT/SCOUPE)
	45	EVAP PURGE VALVE OR CKT FAILURE
	47	ISA OR CKT FAILURE
	59	REAR HO2S OR CKT FAILURE (CAL ELANTRA/ALL SONATA)
	81	A/F LEAN-LEAKING OR CLOGGED INJECTOR

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	82	A/F RICH-LEAKING OR CLOGGED INJECTOR
	85	IAT SENSOR SHORT CKT

OBD II SYSTEMS

YEAR: 1996-98	DTC NO.	DESCRIPTION
1996-98 OBD II	P0100	Mass or Volume Air Flow Circuit Malfunction
	P0102	MAF Sensor Circuit, Low Input
	P0103	MAF Sensor Circuit, High Input
	P0105	BARO Pressure Circuit Malfunction
	P0110	IAT Sensor Circuit Malfunction
	P0112	IAT Sensor Circuit, Low Input
	P0113	IAT Sensor Circuit, High Input
	P0115	ECT Circuit Malfunction
	P0116	ECT Circuit, Out of Range
	P0117	ECT Circuit, Low Input
	P0118	ECT Circuit, High Input
	P0120	TPS Circuit Malfunction
	P0121	TPS Circuit Range Does not Agree with MAF Sensor
	P0122	TPS Circuit, Low Input
	P0123	TPS Circuit, High Input
	P0125	Coolant Temp. Low, no Closed Loop Fuel Control
	P0130	O2S Circuit Malfunction, Bank 1 Sensor 1
	P0131	O2S Circuit, Low Voltage, Bank 1 Sensor 1
	P0132	O2S Circuit, High Voltage, Bank 1 Sensor 1
	P0133	O2S Circuit, Slow Response, Bank 1 Sensor 1
	P0134	O2S Circuit, no Activity Detected, Bank 1 Sensor 1
	P0135	O2S Heater Circuit Malfunction, Bank 1 Sensor 1
	P0136	O2S Circuit Malfunction, Bank 1 Sensor 2
	P0137	O2S Circuit, Low Voltage, Bank 1 Sensor 2
	P0138	O2S Circuit, High Voltage, Bank 1 Sensor 2
	P0141	O2S Heater Circuit Malfunction, Bank 1 Sensor 2
	P0170	Fuel Trim Malfunction
	P0201	Fuel Injector No. 1, Circuit Malfunction
	P0202	Fuel Injector No. 2, Circuit Malfunction
	P0203	Fuel Injector No. 3, Circuit Malfunction

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTION
	P0204	Fuel Injector No. 4, Circuit Malfunction
	P0205	Fuel Injector No. 5, Circuit Malfunction
	P0206	Fuel Injector No. 6, Circuit Malfunction
	P0300	Random Misfire Detected
	P0301	Cylinder No. 1, Misfire Detected
	P0302	Cylinder No. 2, Misfire Detected
	P0303	Cylinder No. 3, Misfire Detected
	P0304	Cylinder No. 4, Misfire Detected
	P0305	Cylinder No. 5, Misfire Detected
	P0306	Cylinder No. 6, Misfire Detected
	P0326	Knock Sensor Circuit, Out of Range
	P0335	Crankshaft Position Sensor Circuit, Malfunction
	P0336	Crankshaft Position Sensor, Circuit Out of Range
	P0340	Camshaft Position Sensor, Circuit Malfunction
	P0342	Camshaft Position Sensor Circuit, Low Input
	P0343	Camshaft Position Sensor Circuit, High Input
	P0400	EGR Flow, System Malfunction
	P0403	EGR Solenoid Circuit, Malfunction
	P0420	Catalyst Efficiency Below Threshold
	P0421	Warm Up Catalyst Efficiency Below Threshold
	P0422	Main Catalyst Efficiency Below Threshold
	P0440	EVAP Control System Malfunction
	P0441	EVAP Purge System, Incorrect Flow
	P0442	EVAP Control System, Small Leak Detected
	P0443	EVAP Purge Control Valve Circuit Malfunction
	P0444	Purge Control Valve, Circuit Open
	P0445	Purge Control Valve, Circuit Shorted
	P0446	EVAP Control System, Canister Close Valve, Stuck Closed
	P0447	EVAP Control System, Vent Control Valve, Short to Ground
	P0448	EVAP Control System, Vent Control Valve, Short to Battery Voltage
	P0450	EVAP Control System, Fuel Tank Differential Pressure Sensor Malfunction

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTION
	P0451	EVAP Control System, Pressure Sensor Signal not Plausible
	P0452	EVAP Control System, Fuel Tank Pressure Sensor Signal Low
	P0453	EVAP Control System, Fuel Tank Pressure Sensor Signal High
	P0455	EVAP Control System, Incorrect Purge Flow
	P0500	Vehicle Speed Sensor Malfunction
	P0501	Vehicle Speed Sensor, Circuit Out of Range
	P0505	Idle Speed Control System Malfunction
	P0506	Idle RPM Lower than Expected
	P0507	Idle RPM Higher than Expected
	P0510	Closed Throttle Sensor Idle Switch Malfunction
	P0562	Power Supply System, Low Voltage
	P0563	Power Supply System, High Voltage
	P0605	Internal Control Module, ROM Error
	P0700	TCM to ECM Input Pulse Malfunction
	P0705	Inhibitor Switch Malfunction
	P0707	A/T Range Circuit, No Input Signal
	P0708	A/T Range Circuit, More than Two Input Signals
	P0712	Transmission Fluid Temp. Sensor, Open Circuit
	P0713	Transmission Fluid Temp. Sensor, Short Circuit
	P0715	Pulse Generator A or B, Open Circuit
	P0717	Pulse Generator A, Open Circuit
	P0722	Pulse Generator B, Open Circuit
	P0727	Ignition Pulse Pickup Circuit
	P0731	1st Gear shift Does Not Match Engine Speed
	P0732	2nd Gear shift Does Not Match Engine Speed
	P0733	3rd Gear shift Does Not Match Engine Speed
	P0734	4th Gear shift Does Not Match Engine Speed
	P0740	Damper Clutch System Malfunction
	P0742	Damper Clutch System Malfunction
	P0743	Damper Clutch System Malfunction
	P0747	Pressure Control Solenoid Valve, Open Circuit

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTION
	P0748	Pressure Control Solenoid Valve, Short Circuit
	P0750	Shift Control Circuit Malfunction
	P0752	Shift Control Solenoid A, Open Circuit
	P0753	Shift Control Solenoid Valve A, Short Circuit
	P0757	Shift Control Solenoid Valve B, Open Circuit
	P0758	Shift Control Solenoid Valve B, Short Circuit
	P1123	Long Term Fuel Trim Additive Air, System Too Rich
	P1124	Long Term Fuel Trim Additive Air, System Too Lean
	P1127	Long Term Fuel Trim Multiplicative, System Too Rich
	P1128	Long Term Fuel Trim Multiplicative, System Too Lean
	P1140	Load Detection Sensor, TPS and MAF do not Match
	P1400	MDP Sensor Circuit Malfunction
	P1510	Idle Control Valve, Opening Coil Circuit Shorted
	P1513	Idle Control Valve, Opening Coil Circuit Open
	P1521	P/S Pressure Switch Signal, Malfunction
	P1552	Idle Control Valve, Closing Coil Circuit Shorted
	P1553	Idle Control Valve, Closing Coil Circuit Open
	P1586	MT/AT Encoding Circuit not Rational
	P1605	Acceleration Circuit Malfunction
	P1606	Acceleration Circuit not Rational
	P1611	MIL Request Signal Circuit, Low Input
	P1613	MIL Request Signal Circuit, High Input (Elantra/Tiburon)
	P1614	MIL Request Signal Circuit, High Input (Accent)
	P1624	TCM Component Malfunction
	P1665	Power Stage, Group A Malfunction
	P1670	Power Stage, Group B Malfunction
	P1701	Throttle Position Sensor, Open Circuit
	P1702	Throttle Position Sensor, Short Circuit
	P1704	TPS Malfunction or Improper Adjustment
	P1709	Kickdown Servo Switch Circuit
	P1714	Closed Throttle Position Switch Circuit
	P1715	Pulse Generator Assembly Malfunction

YEAR: 1996-98 (CONTINUED)	DTC NO.	DESCRIPTION
	P1744	Damper Clutch System Malfunction
	P1750	Solenoid Assembly Malfunction

INFINITI

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1. VEHICLES AND SYSTEMS

Using the Asian cartridge, the following Chrysler Imports vehicles can be diagnosed.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1990						
M30	3.0L V6	VG30E	EFI	2	MIL/LED	NONE
Q45	4.5L V8	VH45DE	EFI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1991						
G20	2.0L I4	SR20DE	EFI	2	MIL/LED	NONE
M30	3.0L V6	VG30E	EFI	2	MIL/LED	NONE
Q45	4.5L V8	VH45DE	EFI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1992						
G20	2.0L I4	SR20DE	EFI	2	MIL/LED	NONE
M30	3.0L V6	VG30E	EFI	2	MIL/LED	NONE
Q45	4.5L V8	VH45DE	EFI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1993						
G20	2.0L I4	SR20DE	SMPI	2	MIL/LED	NONE
J30	3.0L V6	VG30E	SMPI	2	MIL/LED	NONE
Q45	4.5L V8	VH45DE	SMPI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1994						
G20	2.0L I4	SR20DE	SMPI	2	MIL/LED	NONE
J30	3.0L V6	VG30E	SMPI	2	MIL/LED	NONE
Q45	4.5L V8	VH45DE	SMPI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1995						
G20	2.0L I4	SR20DE	SMPI	N/A	AUTOCODES	OBD II*
J30	3.0L V6	VG30DE	SMPI	2	MIL/LED	NONE
Q45	4.5L V8	VH45DE	SMPI	2	MIL/LED	NONE

* For Adapter Type OBD II see the Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1996						
G20	2.0L I4	SR20DE	SMPI	N/A	AUTOCODES	OBD II*
I30	3.0L V6	VQ30DE	SMPI	N/A	AUTOCODES	OBD II*
J30	3.0L V6	VG30DE	SMPI	N/A	AUTOCODES	OBD II*
Q45	4.5L V8	VH45DE	SMPI	N/A	AUTOCODES	OBD II*

* For Adapter Type OBD II see the Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1997						
I30	3.0L V6	VQ30DE	SMPI	N/A	AUTOCODES	OBD II*
J30	3.0L V6	VG30DE	SMPI	N/A	AUTOCODES	OBD II*
QX4	3.3L V6	VG33E	SMPI	N/A	AUTOCODES	OBD II*

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
Q45	4.1L V8	VH41DE	SMPI	N/A	AUTOCODES	OBD II*

* For Adapter Type OBD II see the Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1998						
I30	3.0L V6	VQ30DE	MFI	N/A	AUTOCODES	OBD II*
QX4	3.3L V6	VG33E	MFI	N/A	AUTOCODES	OBD II*
Q45	4.1L V8	VH41DE	MFI	N/A	AUTOCODES	OBD II*

* For Adapter Type OBD II see the Common Test Modes OBD II Systems section for operating instructions and test mode information.

2. INFINITI SPECIFIC INFORMATION

The Infiniti vehicles covered by the Asian Imports Cartridge are separated into two different sections within the Asian Imports Operator's Manual. The vehicle's on-board system will determine which section of the Operator's Manual will need to be used. Vehicles that are OBD II certified have information about the operating test modes in the Common Test Modes OBD II Systems section of the Operator's Manual. Vehicles that have OBD or OBD I systems have test mode information in this section of the Operator's Manual. In these sections, you will find information on test modes available, how to connect the tester to the vehicle, and operating instructions for the different test modes. A complete list of Infiniti Diagnostic Trouble Codes is included at the back of each section.

To determine which section of the Operator's Manual to use for diagnostic information and instructions, look at Adapter Type of the Vehicle and Systems chart. If the vehicle you are testing has an OBD II adapter type, use the Common Test Modes OBD II Systems section of the Operator's Manual. If the vehicle you are testing does not have the OBD II Adapter Type, use this section to diagnose the vehicle under test.

3. TEST MODES AVAILABLE

The following test modes are available when testing Infiniti vehicles. General operating instructions for test modes other than DTC ENTRY are included in the Common Test Modes OBD, OBD I Systems section. There are also Infiniti specific instructions for operating the test modes in *TEST MODES* on page 10.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

SUBMODE F3: ID INFO
SUBMODE F5: ECU LOCATION

4. GETTING STARTED

Before operating the Asian Imports Cartridge with an Infiniti vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

> **NOTE**
>
> Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery adapter cable.

3. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to Figure 1-1.

FIGURE 1-1. Tester stand-alone display

4. If the display is correct, press ENTER. If the display is not correct, refer to Appendix D
5. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite the manufacturer you wish to select.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE

Next, the Engine Select menu is displayed. Press NO until the engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to *TEST MODES* on page 10, and the Common Test Modes OBD, OBD I Systems section for operating the test modes with Infiniti vehicles

.

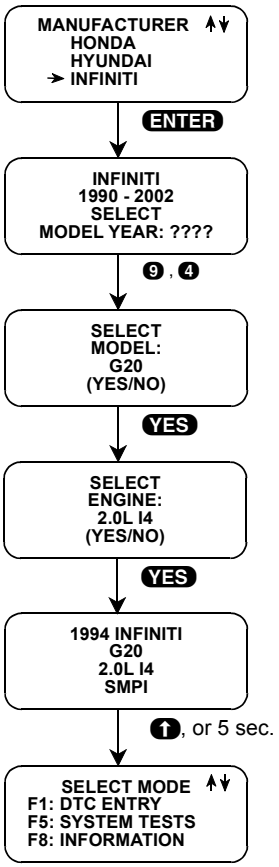

FIGURE 1-2. Infiniti Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
ENTER	Confirm Power-up display.
EXIT	Return to previous display

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Infiniti vehicles may be selected. You may select Mode F1: DTC ENTRY, Mode F5: SYSTEM TESTS, or Mode F8: INFORMATION without connecting the tester to the vehicle. General operating instructions for the test modes other than DTC Entry are included in the Common Test Modes OBD, OBD I Systems section.

Detailed operating instructions for using Mode F1: DTC ENTRY with Infiniti vehicles are included in the following procedure.

READING CODES

When Mode F1: DTC ENTRY is selected, the tester displays submodes which provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory buffer), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

To read DTC codes on Infiniti vehicles you must locate the ECU and observe the flashing LED or instrument panel MIL. If you do not know where the ECU is located, select Mode F5: ECU LOCATION from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the ECU, you can input the DTC into the tester so the tester can define the code. A complete list of Infiniti DTCs is also included in *INFINITI DIAGNOSTIC TROUBLE CODES (DTCs)* on page 13.

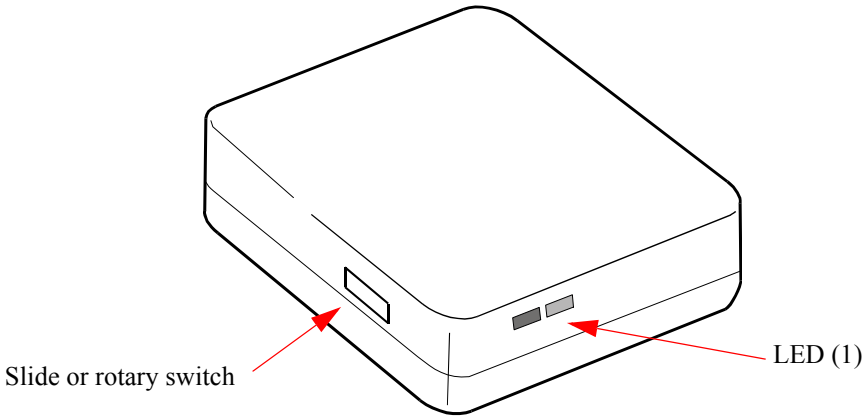

FIGURE 1-3. Typical ECU

MODE F1: DTC ENTRY

When Mode F1: DTC ENTRY is selected, the tester displays five submodes:

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST

F3: REVIEW DTC
F4: CLEAR DTC(s)

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the factory service manual for this information, make sure that you are following the correct steps for the system you are working on.

Submode F1: Enter DTC(s)

This submode provides you with a description of how to obtain DTC information from the ECU and how to enter this information into the tester. On Infiniti vehicles, there is one method to enter manually read DTCs which is the Enter DTC submode.

The Enter DTC submode has two question marks on the tester display for entering the DTC. The tester screen prompts you to enter the DTCs read off the ECU LED(s) or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the ECU LED(s) or MIL. Incorrect ECU LED or MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section.

To manually read DTCs from 1990-95 Infiniti ECU's, do the following:

1. Locate the Vehicle ECU.
2. Turn the ignition key to the ON position.
3. Turn the rotary diagnostic test mode selector on the ECU fully clockwise, or move the slide switch to the opposite position.
4. Wait at least 2 seconds.
5. Turn the diagnostic test mode selector fully counter-clockwise, or push the slide switch back to the original position.
6. The self-diagnostic system is now in the self-diagnostic code output mode (Key On, Engine Off, Mode 2).
7. The DTCs are indicated by a flashing red LED and the MIL lamp.
8. Count the flashes on the ECU LED or MIL. Long flashes are the 10's digit and short flashes are the 1's digit.
9. Write down all received DTCs.
10. When DTC recording is complete, turn the rotary diagnostic mode selector fully clockwise, or push the slide switch to the opposite position.
11. Wait at least 2 seconds and then turn the rotary diagnostic mode selector fully counter-clockwise, or push the slide switch back to the original position.

NOTE

For further information, refer to the Factory Service Manual for the vehicle you are testing.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions You can also select the DTCs obtained from the ECU LED or MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the ECU LED. You can "Select" the DTC on the tester screen for later review or printing. Refer to Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC(s)

This submode provides a way of reviewing DTCs that you selected or entered in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory of DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

7. INFINITI DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Infiniti vehicles are listed in the following tables.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD, OBD I SYSTEMS

YEAR:1990	DTC NO.	DESCRIPTOR
1990	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	16	TCS SIGNAL
	21	IGNITION SIGNAL OR CKT FAILURE
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EXHAUST GAS TEMP SENSOR CIRCUIT
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	46	SECONDARY TPS OR CKT FAILURE
	51	FUEL INJECTOR OR CKT FAILURE
	54	A/T CONTROLLER CIRCUIT FAILURE
	55	NO DTCs DETECTED BY ECU

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE

YEAR: 1991	DTC NO.	DESCRIPTOR
	14	VSS OR VSS CIRCUIT FAILURE
	16	TCS SIGNAL
	21	IGNITION SIGNAL OR CKT FAILURE
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EXHAUST GAS TEMP SENSOR CIRCUIT
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	46	SECONDARY TPS OR CKT FAILURE
	51	FUEL INJECTOR OR CKT FAILURE
	54	A/T CONTROLLER CIRCUIT FAILURE
	55	NO DTCs DETECTED BY ECU

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	16	TRACTION CONTROL SYSTEM FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR SYSTEM FAIL (CA MODELS)
	33	LEFT O2S OR CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EXHAUST GAS TEMP SENSOR (CA ONLY)
	42	FUEL TEMP SENSOR OR CKT FAILURE

YEAR: 1992	DTC NO.	DESCRIPTOR
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK (CA MODELS)
	51	INJECTOR CIRCUIT (CA MODELS)
	53	RIGHT O2S OR CIRCUIT FAILURE
	54	TCM TO ECU CIRCUIT FAILURE
	55	NO DTCs DETECTED BY ECU

YEAR: 1993	DTC NO.	DESCRIPTOR
1993	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	MAF SENSOR OR MAF CKT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	16	TRACTION CONTROL SYSTEM FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	31	FAULTY ECM OR ECM CKT FAILURE
	32	EGR SYSTEM FAIL (CA MODELS)
	33	HO2S OR HO2S CIRCUIT FAILURE LEFT HO2S OR HO2S CKT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EGR TEMP SENSOR (CA MODELS)
	42	FUEL TEMP SENSOR OR CKT FAILURE
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK (CA MODELS)
	46	SECONDARY TPS (Q45 WITH TCS)
	51	INJECTOR CIRCUIT (CA MODELS)
	53	RIGHT HO2S OR HO2S CKT FAILURE
	54	TCM TO ECU CIRCUIT FAILURE
	55	NO DTCs DETECTED BY ECM

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	11	CAMSHAFT POS. OR CIRCUIT FAILURE
	12	MAF SENSOR OR MAF CKT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	16	TCS SIGNAL CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	25	IDLE SPD CONTROL FUNCTION
	31	FAULTY ECM OR ECM CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	FRONT HO2S OR HO2S CKT FAILURE LEFT HO2S OR HO2S CKT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EGR TEMP SENSOR CIRCUIT FAILURE
	36	EGRC-BPT VALVE FUNCTION
	37	CLOSED LOOP CONTROL
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	46	SECONDARY TPS OR CKT FAILURE
	51	FUEL INJECTOR OR CKT FAILURE
	53	RIGHT HO2S OR HO2S CKT FAILURE
	54	TCM TO ECM CIRCUIT FAILURE
	55	NO DTCs DETECTED BY ECM
	65	MISFIRE (NO.4 CYLINDER)
	66	MISFIRE (NO.3 CYLINDER)
	67	MISFIRE (NO.2 CYLINDER)
	68	MISFIRE (NO.1 CYLINDER)
	71	MISFIRE (MULTIPLE CYL)
	72	THREE WAY CATALYST FUNC.
	76	FUEL INJECTION SYSTEM FUNCTION

YEAR: 1994	DTC NO.	DESCRIPTOR
	77	REAR HO2S OR HO2S CKT FAILURE
	82	CKP SENSOR OR CKP CIRCUIT FAIL
	84	A/T DIAGNOSIS COMM. LINE
	91	FRONT HO2S OR HO2S CKT FAILURE
	95	CKP SENSOR OR CKP CIRCUIT FAIL
	98	ECT SENSOR OR ECT CKT FAILURE

YEAR: 1995	DTC NO.	DESCRIPTOR
1995	11	CAM SENSOR CIRCUIT MALFUNCTION
	12	MAF SENSOR CIRCUIT, OPEN OR SHORT
	13	ECT SENSOR CIRCUIT, OPEN OR SHORT
	14	VSS OR CIRCUIT, OPEN OR SHORT
	16	TCS SIGNAL CIRCUIT, OPEN OR SHORT
	21	IGNITION SIGNAL CIRCUIT MALFUNCTION
	31	ECM MALFUNCTION
	32	EGR VALVE OR SOLENOID MALFUNCTION
	33	LEFT HO2 SENSOR CIRCUIT, OPEN OR SHORT
	34	KNOCK SENSOR CIRCUIT, OPEN OR SHORT
	35	EGR TEMP. SENSOR CIRCUIT, OPEN OR SHORT
	43	TPS CIRCUIT, OPEN OR SHORT
	45	FUEL INJECTOR LEAK
	46	SECONDARY TPS CIRCUIT, OPEN OR SHORT
	51	FUEL INJECTOR CIRCUIT, OPEN OR SHORT
	53	RIGHT HO2 SENSOR CIRCUIT, OPEN OR SHORT
	54	A/T COMMUNICATION LINE, OPEN OR SHORT
	55	NO MALFUNCTION DETECTED BY ECM

OBD II SYSTEMS

YEAR: 1996-98	DTC NO.	DESCRIPTOR
1996-98 OBD II	P0000	No Failures Indicated
	P0100	MAF Sensor Circuit
	P0105	Absolute Pressure Sensor Circuit
	P0110	IAT Sensor Circuit
	P0115	ECT Sensor Circuit
	P0120	TPS Circuit
	P0125	ECT Sensor Circuit, Excessive Time to Enter Closed Loop
	P0130	Front HO2 Sensor Malfunction, no Closed Loop (Right Bank) (Left Bank, Q45)
	P0131	Front HO2 Sensor, Lean Shift Monitor (Right Bank) (Left Bank, Q45)
	P0132	Front HO2 Sensor, Rich Shift Monitor (Right Bank) (Left Bank, Q45)
	P0133	Front HO2 Sensor, Response Monitor (Right Bank) (Left Bank, Q45)
	P0134	Front HO2 Sensor, High Voltage (Right Bank) (Left Bank, Q45)
	P0135	Front HO2 Sensor, Heater Circuit Malfunction (Right Bank) (Left Bank, Q45)
	P0136	Rear HO2 Sensor Circuit Malfunction (Right Bank) (Left Bank, Q45)
	P0137	Rear HO2 Sensor Minimum Voltage Monitor (Right Bank) (Left Bank, Q45)
	P0138	Rear HO2 Sensor Maximum Voltage Monitor (Right Bank) (Left Bank, Q45)
	P0139	Rear HO2 Sensor Response Monitor (Right Bank) (Left Bank, Q45)
	P0140	Rear HO2 Sensor, High Voltage (Right Bank) (Left Bank, Q45)
	P0141	Rear HO2 Sensor, Heater Circuit Malfunction (Right Bank) (Left Bank, Q45)
	P0150	Front HO2 Sensor Malfunction, no Closed Loop (Left Bank (Right Bank, Q45)
	P0151	Front HO2 Sensor, Lean Shift Monitor (Left Bank) (Right Bank, Q45)
	P0152	Front HO2 Sensor, Rich Shift Monitor (Left Bank) (Right Bank, Q45)

YEAR: 1996-98	DTC NO.	DESCRIPTOR
	P0153	Front HO2 Sensor, Response Monitor (Left Bank) (Right Bank, Q45)
	P0154	Front HO2 Sensor, High Voltage (Left Bank) (Right Bank, Q45)
	P0155	Front HO2 Sensor, Heater Circuit Malfunction (Left Bank) (Right Bank, Q45)
	P0156	Rear HO2 Sensor Circuit Malfunction (Left Bank) (Right Bank, Q45)
	P0157	Rear HO2 Sensor Minimum Voltage Monitor (Left Bank) (Right Bank, Q45)
	P0158	Rear HO2 Sensor Maximum Voltage Monitor (Left Bank) (Right Bank, Q45)
	P0159	Rear HO2 Sensor Response Monitor (Left Bank) (Right Bank, Q45)
	P0160	Rear HO2 Sensor, High Voltage (Left Bank) (Right Bank, Q45)
	P0161	Rear HO2 Sensor, Heater Circuit Malfunction (Left Bank) (Right Bank, Q45)
	P0170	Fuel Injection System Function
	P0171	Fuel Injection System Lean (Right Bank) (Left Bank, Q45)
	P0172	Fuel Injection System Rich (Right Bank) (Left Bank, Q45)
	P0174	Fuel Injection System Lean (Left Bank) (Right Bank, Q45)
	P0175	Fuel Injection System Rich (Left Bank) (Right Bank, Q45)
	P0180	Temp. Sensor in Fuel Tank, Circuit Malfunction
	P0300	Multiple Cylinder Misfire
	P0301	Cylinder No. 1, Misfire
	P0302	Cylinder No. 2, Misfire
	P0303	Cylinder No. 3, Misfire
	P0304	Cylinder No. 4, Misfire
	P0305	Cylinder No. 5, Misfire
	P0306	Cylinder No. 6, Misfire
	P0325	Knock Sensor Circuit (Left Bank, Q45)
	P0330	Knock Sensor Circuit (Right Bank, Q45)

YEAR: 1996-98	DTC NO.	DESCRIPTOR
	P0335	Crankshaft Position Sensor (OBD) Circuit Malfunction
	P0340	Camshaft Position Sensor Circuit Malfunction
	P0400	EGR System Malfunction
	P0402	EGR Control BPT Valve Function
	P0420	3-Way Catalyst Malfunction (Right Bank) (Left Bank, Q45)
	P0430	3-Way Catalyst Malfunction (Left Bank) (Right Bank, Q45)
	P0440	EVAP System, Small Leak Detected
	P0443	EVAP Purge Valve or Solenoid Valve Circuit Malfunction
	P0446	EVAP Vent Control Valve Circuit Malfunction
	P0450	EVAP System Pressure Sensor Malfunction
	P0500	VSS Circuit Malfunction
	P0505	IAC Valve Aux. Air Control Valve Malfunction
	P0510	Closed Throttle Position Switch Malfunction
	P0600	Signal Circuit from A/T to ECM Malfunction
	P0605	ECM Malfunction
	P0705	Park/Neutral Switch or Inhibitor Switch Circuit
	P0710	Trans. Fluid Temp. Sensor Circuit
	P0720	A/T VSS Circuit Malfunction
	P0725	Engine RPM Signal Malfunction
	P0731	A/T 1st Gear Shift Signal Malfunction
	P0732	A/T 2nd Gear Shift Signal Malfunction
	P0733	A/T 3rd Gear Shift Signal Malfunction
	P0734	A/T 4th Gear Shift Signal Malfunction
	P0740	TCC Valve Solenoid Malfunction
	P0744	A/T TCC Solenoid Valve, Improper Lock-Up Operation
	P0745	A/T Line Pressure Solenoid Valve Malfunction
	P0750	Shift Solenoid Valve A Malfunction
	P0755	Shift Solenoid Valve B Malfunction
	P1105	MAP/ BARO Switch Solenoid Valve Malfunction
	P1110	Intake Valve Timing Control (Left Bank, Q45)
	P1120	Secondary TPS Circuit Malfunction

YEAR: 1996-98	DTC NO.	DESCRIPTOR
	P1125	Tandem Throttle Position Sensor Circuit Malfunction
	P1135	Intake Valve Timing Control (Right Bank, Q45)
	P1140	Intake Valve Timing Position Sensor (Left Bank, Q45)
	P1145	Intake Valve Timing Position Sensor (Right Bank, Q45)
	P1148	Closed Loop Malfunction (Right Bank) (Left Bank, Q45)
	P1168	Closed Loop Malfunction (Left Bank) (Right Bank, Q45)
	P1220	Fuel Pump Control Module Circuit
	P1320	Ignition Signal Primary Circuit Malfunction
	P1335	Crankshaft Position Sensor (Reference) Circuit Malfunction
	P1336	Crankshaft Position Sensor (OBD) or Flywheel Malfunction
	P1400	EGR Control Solenoid Valve Malfunction
	P1401	EGR Temp. Sensor Circuit
	P1402	EGR System Malfunction
	P1440	EVAP System, Small Leak, Positive Pressure
	P1441	Vacuum Cut Bypass Valve, Circuit Malfunction
	P1443	Canister Control Vacuum Check Switch Circuit Malfunction
	P1444	EVAP Purge Volume Control Solenoid Valve
	P1445	EVAP Purge Volume Control Valve
	P1446	EVAP Vent Control Valve Closed
	P1447	EVAP Control System Purge Flow Monitoring
	P1448	EVAP Vent Control Valve Open
	P1490	Vacuum Cut Bypass Valve, Circuit Malfunction
	P1491	Vacuum Cut Bypass Valve Malfunction
	P1492	EVAP Purge Control Valve or Solenoid Valve
	P1493	EVAP Purge Control Valve and Solenoid Valve
	P1605	A/T Diagnosis Communication Line
	P1705	Throttle Position Sensor or Switch
	P1706	Park/Neutral Switch Circuit
	P1760	Overrun Clutch Solenoid Valve

KIA

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1. VEHICLES AND SYSTEMS

Using the **Asian Imports Cartridge**, the following Kia vehicles can be diagnosed.

MODEL	ENGINE	FUEL TYPE	CODE TYPE	ADAPTER TYPE
1994				
SEPHIA	1.6L I4	MPI	MILCODES	NONE

2. KIA SPECIFIC INFORMATION

TWO WAYS TO DIAGNOSE KIA

Kia powertrain diagnosis can be performed with the Asian Imports cartridge installed in a Tech 1, Tech 1A, or Mastertech tester. Additionally, Kia vehicles can be diagnosed with the aftermarket version of the Kia OEM level program card software using the Mastertech tester only. Operating instructions and test mode information are available for the OEM level software in the Kia Program Card Operator's Manual.

If you do not have the necessary Program Card and Mastertech tester to perform OEM level diagnostics, you can use the Asian Imports Cartridge for limited model year coverage. The following Kia section includes the test modes available, how to connect the tester to the vehicle, operating instructions for DTC entry, and the applicable DTCs for each model year.

3. TEST MODES AVAILABLE

The following test modes are available when testing Kia vehicles. Operating instructions for test modes other than DTC Entry are included in the Common Test Modes OBD, OBD I Systems section. There are Kia specific instructions for operating the test modes. Refer to *TEST MODES* on page 8.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

SUBMODE F3: ID INFO
SUBMODE F4: DJC LOCATION
SUBMODE F5: ECU LOCATION

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Kia vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

> **NOTE**
>
> Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery adapter cable.

3. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester stand-alone display

4. If the display is correct, press **ENTER**. If the display is not correct, refer to Appendix D.
5. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite KIA.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 4, for 1994 models.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE

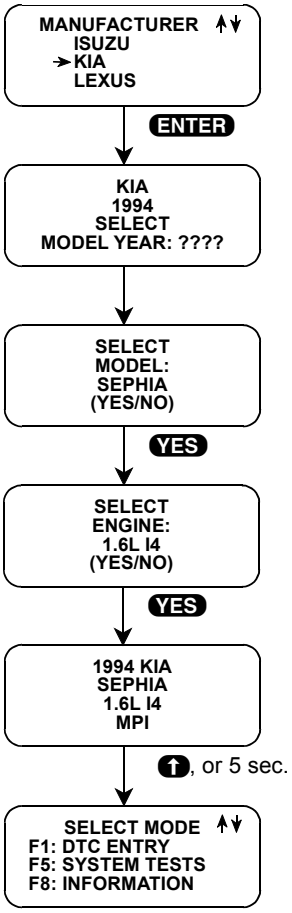
Next, the Engine Select menu is displayed. Press NO until the engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to Section 6 (Test Modes), and the Common Test Modes OBD, OBD I Systems section for operating the test modes with Kia vehicles.



KIA Vehicle Selection

ACTIVE KEYS	
↑ ↓	Scrolls through screen display.
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
ENTER	Confirm Power-up display.
EXIT	Return to previous display.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Kia vehicles may be selected. You may select Mode F1: DTC ENTRY, Mode F5: SYSTEM TESTS, or Mode F8: INFORMATION without connecting the tester to the vehicle. Operating instructions for the test modes other than DTC Entry are included in the Common Test Modes OBD, OBD I Systems section.

Detailed operating instructions for using Mode F1: DTC ENTRY with Kia vehicles are included in the following procedure.

READING CODES

When Mode F1: DTC ENTRY is selected, the tester displays submodes which, after your selection, provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

To read DTC codes on Kia vehicles you must connect the single wire Kia jumper (P/N 02002075) to the data link connector (DLC) and observe the flashing MIL. If you do not know where the DLC is located, select Mode F1: DLC LOCATION from the Information menu. If necessary, refer to Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the MIL, you can input the DTC into the tester so the tester can define the code. A complete list of Kia DTCs is also included in Section 7.

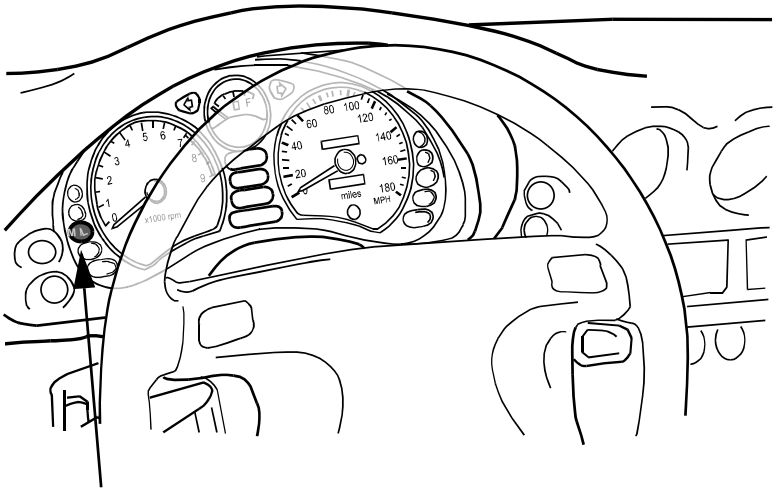
MODE F1: DTC ENTRY

When Mode F1: DTC ENTRY is selected, the tester displays five submodes:

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Manually Reading DTCs

In order to manually read Diagnostic Trouble Codes (DTCs) on Kia vehicles for 1994, you must locate and jumper the data link connector, then read the Malfunction Indicator Lamp (MIL). This method requires the single wire Kia jumper (P/N 02002075) that is placed across 2 pins of the 20 pin DLC. The DTCs are flashed out on the dashboard mounted MIL. Refer to the section on manually reading DTCs from the 1994 Kia vehicles in this section.



Instrument Panel Malfunction Indicator Light (MIL)

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the factory service manual for this information, make sure that you are following the correct steps for the system you are working on.

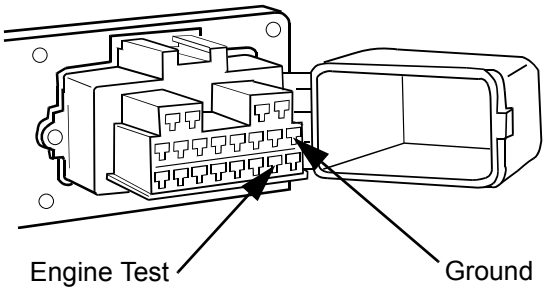
This submode provides you with a description of how to obtain DTC information from the ECU and how to enter this information into the tester. On Kia vehicles, there is one method to enter manually read DTCs which is the Enter DTC submode.

The Enter DTC submode has two question marks on the tester display for entering the DTC. The tester screen prompts you to enter the DTCs read off the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the MIL. Incorrect MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section.

Submode F1: Enter DTC(s)

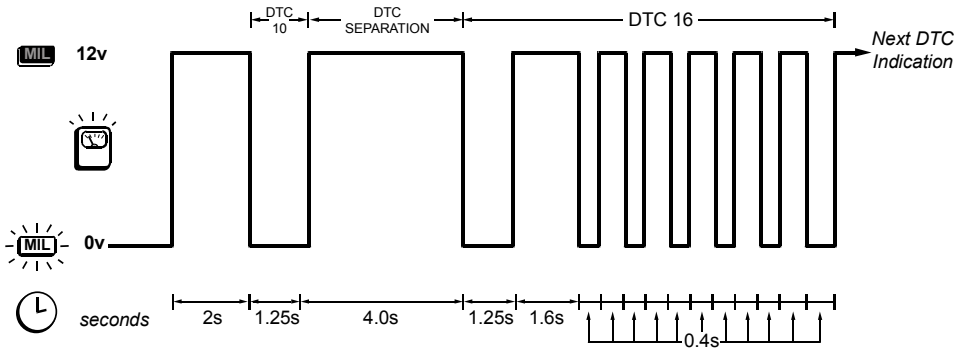
To manually read DTCs from Kia Vehicles Using the Instrument Panel Malfunction Indicator Lamp, do the following:

1. Locate the 20 pin Data Link Connector (DLC).
2. Jump ENG. TEST and GROUND terminals by connecting the single wire Kia Jumper (P/N 02002075) to the vehicle's 20 pin diagnostic jumper connector.



3. Start and warm engine, running at 2000 rpm for 3 minutes.
4. Dashboard MIL will begin flashing DTCs.

   Long MIL flashes are 10's digits, short flash are 1's digits, with a 1.6 second delay. Each DTC is separated by a 4.0 second interval. The overall DTC series is separated by a 4.0 second interval. If no DTCs are stored in ECU, MIL will not flash.



5. The normal DTC condition is no MIL flash.
6. Disconnect Kia single wire jumper.
7. Erase DTCs when all repairs are completed.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions You can also select the DTCs obtained from the MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the MIL. You can “Select” the DTC on the tester screen for later review or printing. Refer to Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC(s)

This submode provides a way of reviewing DTCs that you selected or entered in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to choose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory of DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

7. KIA DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Kia vehicles are listed in the following tables.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD I SYSTEMS

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	2	NO DISTRIBUTOR NE SIGNAL/CKT
	3	NO DISTRIBUTOR G SIGNAL-4V ONLY
	8	MAF SENSOR/CKT-OPEN OR SHORTED
	9	ECT SENSOR/CKT-OPEN OR SHORTED
	10	IAT (MAF) SNSR/CKT-OPEN/SHORTED
	12	TP SENSOR/CKT-OPEN OR SHORTED
	14	AP (ECM) SENSOR/CKT-OPEN/SHORTED
	15	O2 SENSOR/CKT-LESS THAN 0.55V
	17	FDBK SYS-O2S NO CHANGE FOR 50s
	25	FPRC SOL./CKT-OPEN OR SHORTED
	26	EVAP SOL./CKT-OPEN OR SHORTED
	34	ISC SOL./CKT-OPEN OR SHORTED

LEXUS

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1. VEHICLES AND SYSTEMS

Using the **Asian Imports Cartridge**, the following Lexus vehicles can be diagnosed.

MODEL: 1990	ENGINE	ENGINE TYPE	FUEL SYSTEM	INFO TYPE	ADAPTER TYPE
1990					
ES250	2.5L V6	2VZ-FE	SFI	CODES & DATA	CHECK, TDCL
LS4000	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL

MODEL: 1991	ENGINE	ENGINE TYPE	FUEL SYSTEM	INFO TYPE	ADAPTER TYPE
1991					
ES250	2.5L V6	2VZ-FE	SFI	CODES & DATA	CHECK, TDCL
LS400	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL

MODEL: 1992	ENGINE	ENGINE TYPE	FUEL SYSTEM	INFO TYPE	ADAPTER TYPE
1992					
ES300	3.0L V6	3VZ-FE	SFI	CODES & DATA	CHECK, TDCL
SC300	3.0L I6	2JZ-GE	SFI	CODES & DATA	CHECK, TDCL
LS400	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL
SC400	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL

MODEL: 1993	ENGINE	ENGINE TYPE	FUEL SYSTEM	INFO TYPE	ADAPTER TYPE
1993					
ES300	3.0L V6	3VZ-FE	SFI	CODES & DATA	CHECK, TDCL
GS300	3.0L I6	2JZ-GE	SFI	CODES & DATA	CHECK, TDCL
SC300	3.0L I6	2JZ-GE	SFI	CODES & DATA	CHECK, TDCL
LS400	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL
SC400	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL

MODEL: 1994	ENGINE	ENGINE TYPE	FUEL SYSTEM	INFO TYPE	ADAPTER TYPE
1994					
ES300	3.0L V6	3VZ-FE	SFI	CODES & DATA	OBD II*
GS300	3.0L I6	2JZ-GE	SFI	CODES & DATA	CHECK, TDCL
SC300	3.0L I6	2JZ-GE	SFI	CODES & DATA	CHECK, TDCL
LS400	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL
SC400	4.0L V8	1UZ-FE	MFI	CODES & DATA	CHECK, TDCL

* For all Adapter Type OBD II use Common Test Modes OBD II Systems section for operating instructions and test mode information.

ELECTRONIC TRANSMISSIONS

Using the **Asian Imports Cartridge**, the following Lexus Electronic Transmission/Transaxle Applications can be diagnosed.

LEXUS MODEL	TRANSMISSION
SC400 SC300 GS300	A340E
LS400	A341E
ES300	A540E
ES300	A541E

2. LEXUS SPECIFIC INFORMATION

TWO WAYS TO DIAGNOSE LEXUS

Lexus powertrain diagnosis can be performed with the Asian Imports cartridge installed in a Tech 1, Tech 1A, or Mastertech tester. Additionally, Lexus vehicles can be diagnosed with the aftermarket version of the Lexus OEM level program card software using the Mastertech tester only. Operating instructions and test mode information are available for the OEM level software in the Lexus Program Card Operator's Manual.

If you do not have the necessary Program Card and Mastertech tester to perform OEM level diagnostics, you can use the Asian Imports Software for limited model year coverage. The following Lexus section includes the test modes available, how to connect the tester to the vehicle, operating instructions for DTC entry, and the applicable DTCs for each model year.

Parameters that can be displayed by Lexus vehicles, along with a description and states or units/range of each parameter are listed in *DATA LIST PARAMETER DESCRIPTIONS* on page 27.

3. LEXUS OBD SYSTEMS

Lexus vehicles are equipped with On-Board Diagnostic (OBD) systems that operate with engine fuel and emission systems. Lexus OBD systems include transmission (ECT), antilock brake (ABS), cruise control (CCS), air conditioning (A/C), and air bag (AB). For these systems, Lexus vehicles do not use a multiplexed vehicle network, and as a result the separated systems accompany engine OBD systems, with each additional system ECU having it's own diagnostic trouble code (DTC) output line. In addition, engine ECUs support serial data communications. Following is information about each Lexus OBD system.

ENGINE DATA LIST

Lexus engine serial data list is used to aid in diagnostics for the engine control system. Engine control module, input sensors, input switches, and output actuator data list parameters are provided to the tester by the ECU, via a serial data link. Lexus ECUs update this information at 1.3 seconds/update. Not all Lexus vehicles support data list, and in some cases where the tester has determined that a system is inactive and the data list selection is displayed, data list may still not be supported. If a vehicle has a TDCL and Check DLC, Data List may only be supported on the TDCL DLC. This is a function of the data link connector, so make sure that you are connected to the correct DLC for data list information. Review the Lexus application matrix, column titled Information Type, for the availability of serial data on the vehicle being tested.

ENGINE DTCS

Lexus engine DTCs are available on Lexus vehicles with electronic engine control. Engine DTCs are set by the engine ECU when problems with, but not limited to, the ECU, air- fuel ratio, throttle position, and air pump control are detected. In addition, Lexus engine ECUs can be commanded to a sensitive test mode, which is found in the Sensitive Test (this test triggers the engine ECU into a sensitive mode which detects engine DTCs using an environment that is less stringent to DTC detection). The Asian Imports application cartridge supports reading engine DTCs automatically or manually, depending on the state (active or inactive) of the engine system.

ELECTRONICALLY CONTROLLED TRANSMISSION DTCS

Lexus ECT DTCs are available on select Lexus vehicles with an ECT (refer to the factory service manual for the transmission type for the vehicle you are testing). ECT DTCs are set by the ECT ECU when problems with, but not limited to, the ECU, ATF temperature, accumulator control solenoid, and shift control solenoid(s) are detected. The Asian Imports application cartridge supports reading ECT DTCs automatically or manually, depending on the state (active or inactive) of the ECT system.

ANTILOCK BRAKE DTCS

Lexus ABS DTCs are available on select Lexus vehicles equipped with ABS. ABS DTCs are set by the ABS ECU when problems with, but not limited to, the ECU, shorted pump motor relay, low brake fluid level, and pressure sensor are detected. The Asian Imports application cartridge supports reading ABS DTCs automatically or manually, depending on the state (active or inactive) of the ABS system.

CRUISE CONTROL DTCS

Lexus CCS DTCs are available on select Lexus vehicles with automatic cruise control. CCS DTCs are set by the CCS ECU when problems with, but not limited to, the ECU, actuator malfunction, and cruise control switch are detected. The Asian Imports application cartridge supports reading CCS DTCs automatically or manually, depending on the state (active or inactive) of the CCS system.

AIR CONDITIONING DTCS

Lexus A/C DTCs are available on select Lexus vehicles with automatic air conditioning. A/C DTCs are set by the A/C ECU when problems with, but not limited to, the ECU, room temperature sensor, and air mix door are detected. Note that on some Lexus vehicles the A/C system does not support a dashboard MIL. The Asian Imports application cartridge supports reading A/C DTCs automatically or manually, depending on the state (active or inactive) of the A/C system.

AIR BAG DTCS

Lexus AB DTCs are available on select late model Lexus vehicles equipped with the air bag system. AB DTCs are set by the AB ECU when problems with, but not limited to, the ECU, squib malfunction, and warning light circuit are detected. The Asian Imports application cartridge supports reading AB DTCs automatically or manually, depending on the state (active or inactive) of the AB system.

A NOTE ABOUT THE MIL

On some of the above systems, the DTC output line is routed to the dashboard mounted system MIL, which flashes out the DTC when the ECU is commanded to the diagnostic mode. In this case, the tester is connected to the vehicle DLC to command the ECU for the system under test into the diagnostic mode. When that process is started, the DTC can be read from the MIL. The DTC can then be entered into the tester for a description.

Refer to *System Inquiry* on page 13 in for more information on inactive system detection.

SYSTEMS COVERED BY THE SOFTWARE

In order to take advantage of all possible systems available on the vehicle, the Asian Imports application cartridge incorporates an advanced system inquiry strategy that identifies the systems on the vehicle as active or inactive. Some Lexus vehicles can have a single active system, where others can have up to six. So the best possible way to identify the systems on your vehicle is to connect the tester to the Check and TDCL DLCs to determine the available active systems. Refer to *System Inquiry* on page 13 for more information on Inactive system detection.

The following chart lists Lexus ECUs that can be tested using the Asian Imports Cartridge, the test modes available for each system, and the DLC Cable adapter required. Not all vehicles are equipped with every ECU.

ECU	DATA LIST	DTC(S)	SNAPSHOT	ADAPTER
ENGINE	•	•	•	TDCL/CHECK
ECT		•		TDCL
ABS		•		TDCL
CCS		•		TDCL
A/C		•		TDCL
AIR BAG		•		CHECK

NOTE

If you are using the Asian Imports Cartridge with a TECH1 tester, the available Lexus OBD systems will be limited to Engine Data List, Engine DTCs, and Transmission DTCs. Also, you will need a different TECH 1 14/15 Pin DLC Cable (P/N 02001980) which can be used with the Toyota/ Lexus Check Adapter Cable (P/N 02001896) or the Toyota/Lexus TDCL Adapter Cable (P/N 02001895).

4. TEST MODES AVAILABLE

The Select Mode menu displays test modes available for the selected vehicle and system. Operating instructions for modes F0: DATA LIST, F2: DTC, F3: SNAPSHOT, and F8: INFORMATION are included in the Common Test Modes OBD, OBD I Systems section.

Instructions for selecting and operating mode F2: DTC, Submode F1: READ/ENTER DTCs, and Submode F5: SENSITIVE DTC are included in this section.

MODE F0: DATA LIST

(ENGINE ONLY)

MODE F2: DTC

SUBMODE F1: READ DTCs (IF SYSTEM IS ACTIVE)
SUBMODE F1: READ/ENTER DTCs (IF SYSTEM IS INACTIVE)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)
SUBMODE F5: SENSITIVE DTC (ENGINE ONLY)

MODE F3: SNAPSHOT

(ENGINE SYSTEM ONLY, IF ENGINE SYSTEM IS ACTIVE)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

SUBMODE F1: DLC LOCATION
SUBMODE F3: ID INFO

5. GETTING STARTED

Before operating the Asian Imports Cartridge with a Lexus vehicle, do the following:

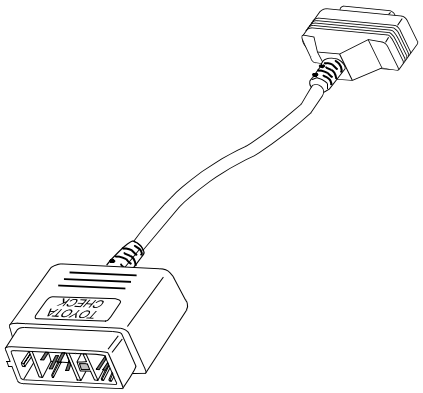
1. Make sure the vehicle ignition is OFF.
2. If the vehicle you are testing is equipped with Overdrive, turn the O/D switch to the ON position.

> **NOTE**
>
> If the O/D switch is not in the ON position, the tester may not be able to read DTCs from the transmission ECU.

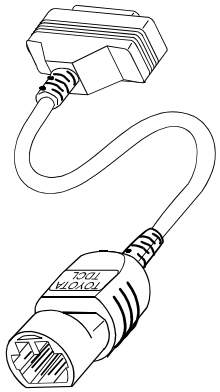
3. When testing a Lexus vehicle, either the Check Adapter Cable or the TDCL Adapter Cable is used to connect the tester to the vehicle DLC. Which adapter cable to use is determined by which system you wish to test. The following chart lists the systems that can be tested with each adapter cable.

ADAPTER	ACTIVE SYSTEMS THAT CAN BE TESTED
CHECK	ENGINE, AIR BAG
TDCL	ENGINE, ECT, ABS, CCS, A/C

Attach the appropriate cable to the end of the tester DLC Cable, then connect the colored end of the cable to the vehicle DLC.



Toyota/Lexus
Check Connector Cable (Blue)



Toyota/Lexus
TDCL Connector Cable (Green)

4. If the Check connector cable is used, the tester may be powered through the Check connector and it might not be necessary to use the cigarette lighter plug.

   If the TDCL connector is used, plug the tester DC Power Cable into the vehicle cigarette lighter.

> **NOTE**
>
> Since the cigarette lighter and Check DLC can be switched, some tests, such as the Sens. DTC Test, require that the power cable be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

5. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester Stand-Alone Display

6. If the display is correct, press **ENTER**. If the display is not correct, refer to Appendix D.
7. Follow the instructions on the following pages to select the vehicle type you are testing.

6. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite the manufacturer you wish to select.

Then press ENTER to select.

REPLAY SNAPSHOT DATA

If Snapshot data is stored in the tester memory, the tester asks if you wish to replay saved Snapshot data. Press YES to replay the saved data, or press NO to proceed to the Vehicle Selection displays.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Select Model menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

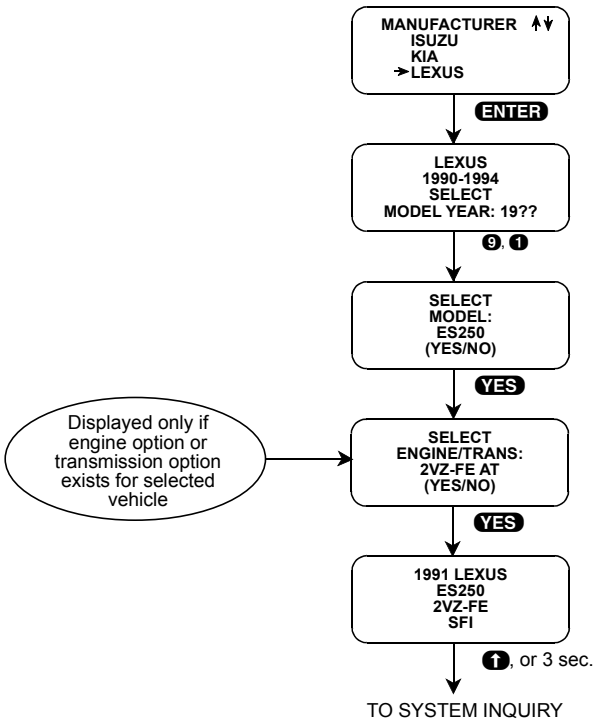
SELECTING THE ENGINE

If more than one engine is available for the selected model, a Select Engine menu is displayed. Press NO until the engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type. The tester displays the summary screen for three seconds, then automatically advances to the System Inquiry displays.

If the summary screen is not correct, press EXIT to go backward through the vehicle selection displays until you reach the information that needs to be changed.

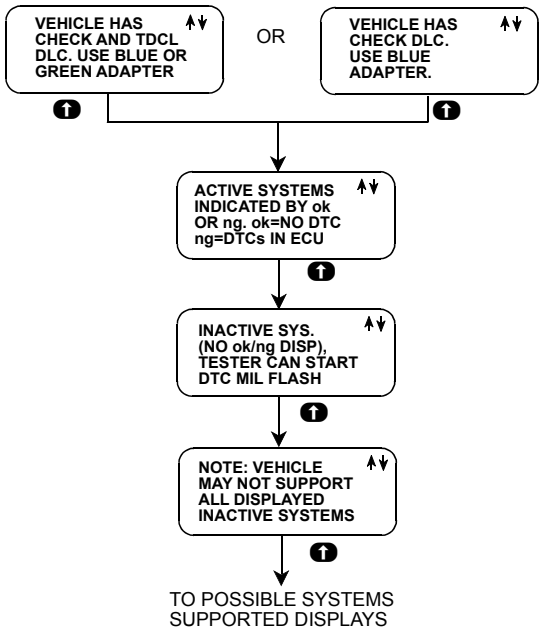


Example of Lexus Vehicle Selection

SYSTEM INQUIRY

Once the vehicle type is entered, the tester displays which adapter(s) can be used on the selected vehicle and then displays information screens which describe the operating differences between Active and Inactive Lexus OBD systems. Use the up and down arrows to scroll through the information displays.

If a system is Active, the tester can read DTCs directly from the ECU and show the DTC number and description on the tester display. Active systems are identified in the Select System menu with “ok” or “ng” (no good). “ok” is displayed to indicate an active system that does not have DTCs stored in the ECU. “ng” (No Good) is displayed to indicate an active system that does have DTCs stored in the ECU (during the inquiry process the tester determines if the system ECU has stored DTCs or not).


VEHICLE HAS CHECK AND TDCL DLC. USE BLUE OR GREEN ADAPTER
OR
VEHICLE HAS CHECK DLC. USE BLUE ADAPTER.
ACTIVE SYSTEMS INDICATED BY ok OR ng. ok=NO DTC ng=DTCs IN ECU
INACTIVE SYS. (NO ok/ng DISP), TESTER CAN START DTC MIL FLASH
NOTE: VEHICLE MAY NOT SUPPORT ALL DISPLAYED INACTIVE SYSTEMS
TO POSSIBLE SYSTEMS SUPPORTED DISPLAYS

If a system is Inactive, the tester cannot read DTCs directly from the ECU, so the DTCs must be manually read from the dashboard MIL and then entered into the tester using Mode F2, Submode F1: READ/ENTER DTCs. Note that some Inactive systems listed in the Possible System lists may not be supported by the vehicle under test. Inactive systems do not display “ok” or “ng” on the right-hand side of the page (see Select System Menu section).

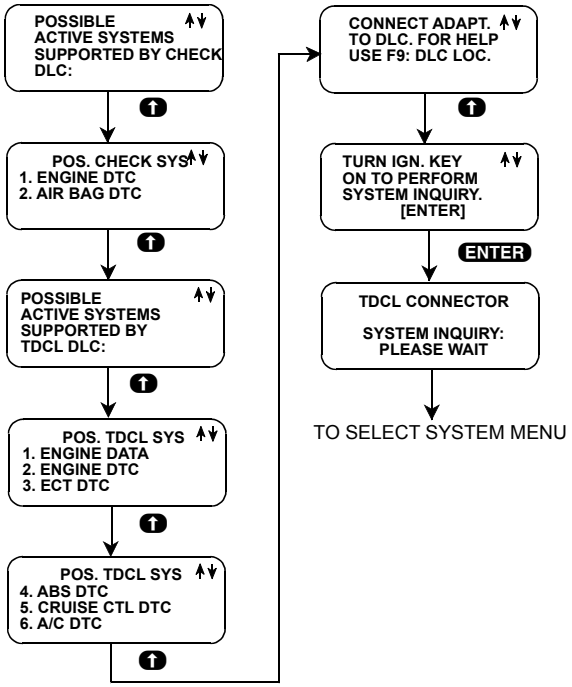
The System Inquiry information screens then display possible Active systems available using the Lexus Check or TDCL Data Link Connector(s) (DLCs).

POSSIBLE SYSTEMS SUPPORTED DISPLAYS

When adapter cable and Active/Inactive information screens have been displayed, the tester instructs you to connect the adapter cable to the tester DLC cable and the vehicle DLC. If you are not sure where the vehicle DLC is located, press F9 at any time during system inquiry for DLC Location information.

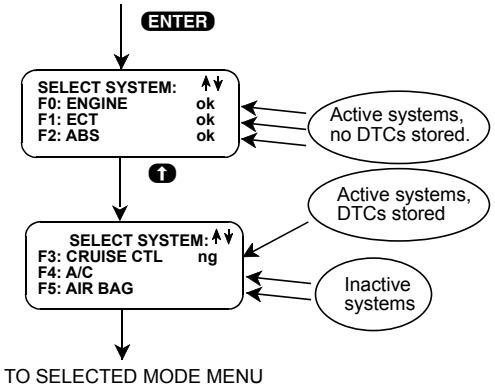
When the tester is connected to the vehicle, turn the ignition key to the ON position, then press ↑ or ENTER to continue with the system inquiry. This portion of the system inquiry can take up to 30 seconds, depending on how many systems are available on the vehicle. The tester lists the systems that can be tested with the installed adapter.

Press ↑ or ENTER to continue to the Select System displays.


POSSIBLE ACTIVE SYSTEMS SUPPORTED BY CHECK DLC:
POS. CHECK SYS
1. ENGINE DTC
2. AIR BAG DTC
POSSIBLE ACTIVE SYSTEMS SUPPORTED BY TDCL DLC:
POS. TDCL SYS
1. ENGINE DATA
2. ENGINE DTC
3. ECT DTC
POS. TDCL SYS
4. ABS DTC
5. CRUISE CTL DTC
6. A/C DTC
CONNECT ADAPT. TO DLC. FOR HELP USE F9: DLC LOC.
TURN IGN. KEY ON TO PERFORM SYSTEM INQUIRY. [ENTER]
ENTER
TDCL CONNECTOR
SYSTEM INQUIRY: PLEASE WAIT
TO SELECT SYSTEM MENU

SELECT SYSTEM MENU

The Select System menu displays the systems available for testing on the selected vehicle. An “ok” or “ng” next to a system indicates that the system is Active, and no asterisk next to a system indicates it is Inactive. Press the function key listed to the left of the system you wish to test to advance to the Select Mode menu.

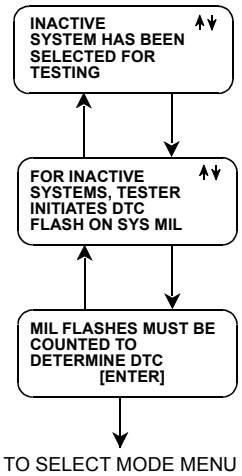


NOTE

If an ECU is malfunctioning and does not communicate with the tester, the ECU will be listed as Inactive in the Select System menu.

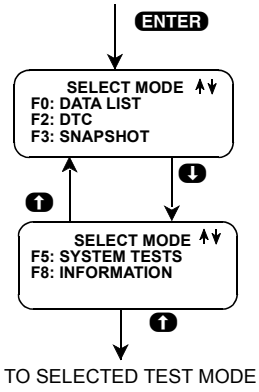
INACTIVE SYSTEM DISPLAYS

If an inactive system has been selected from the Select System Menu, the tester will display information screens. These screens remind you that DTCs will be output on the System MIL Instrument Panel, and MIL flashes must be counted manually to read DTCs.


INACTIVE SYSTEM HAS BEEN SELECTED FOR TESTING
FOR INACTIVE SYSTEMS, TESTER INITIATES DTC FLASH ON SYS MIL
MIL FLASHES MUST BE COUNTED TO DETERMINE DTC [ENTER]
TO SELECT MODE MENU

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to Section 7 (Test Modes) and the Common Test Modes OBD, OBD I Systems section for operating the test modes with Lexus vehicles. A list of Engine system test modes is shown below.



ACTIVE KEYS	
ENTER	Enter the displayed DTC.
↑	Move to the next DTC.
↓	Stop the automatic scrolling.
F9	DLC Location.

7. TEST MODES

The Select Mode menu displays test modes available for the selected vehicle and system. Operating instructions for modes F0: DATA LIST, F2: DTC, F3: SNAPSHOT, and F8: INFORMATION are included in the Common Test Modes OBD, OBD I Systems section.

READING CODES

Instructions for selecting and operating mode F2: DTC, Submode F1: READ/ENTER DTCs, and Submode F5: SENSITIVE DTC are included in this section.

MODE F2: DTC

Submode F1: Read/Enter DTC(s)

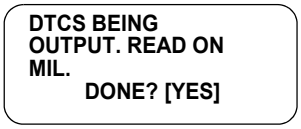
The purpose of the Read/Enter submode is to command the Inactive system ECU to flash DTCs on the dashboard MIL. After the DTC is read from the MIL, a description of the DTCs can then be displayed on the tester screen.

If a Toyota or Lexus system is determined as **Inactive**, the tester will command the ECU to begin flashing the DTC on the system MIL. The F1:READ/ENTER DTC(s) submode displays a message informing you that the tester has initiated DTC flashing on the MIL, and will hold in that mode until you have read the DTC(s) on the MIL.

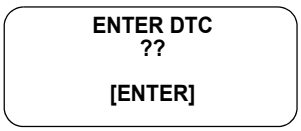
After the DTC is read from the MIL, the tester screen changes to a DTC entry screen. Type in the DTC to obtain a description of the DTC.

To select the Read/Enter DTC(s) submode, do the following:

1. Press F2 to select DTCs from the select mode menu.
2. Press F1 to select READ/ENTER DTC(s) from the DTCs menu.
3. The tester displays a message indicating DTCs are being flashed on the MIL. Look at the MIL to read the flashes and determine the DTC. When the DTC cycle is repeated on the MIL and you have recorded the DTC, press YES.

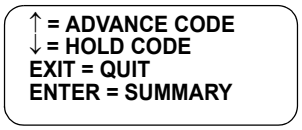


4. Use the tester keypad to enter the DTC displayed on the vehicle system ECU, then press ENTER. An example of the ENTER DTC display for Lexus vehicles is shown below.

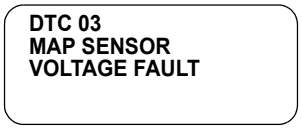


All late model Lexus vehicles with Engine and optional Transmission, ABS, Cruise Control, Air Conditioning, and Air bag systems flash DTCs on the dashboard MIL. On select vehicles, the Air Conditioning system does not have a MIL for DTC reading. DTCs are flashed with the 10's digit first, followed by the 1's digit. There is a 1.5 second period between the 10's and 1's digit, and a 2.5 second period between individual DTCs.

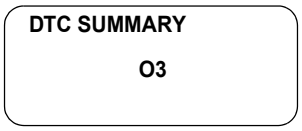
5. When ENTER is pressed, the tester displays the DTC number and a short description of the code.
6. After you enter the DTC, the tester asks for additional trouble code entry. Press YES to enter another DTC. If NO is pressed, the tester displays an instruction screen describing the functions available.



7. Press ↑ to move to the next DTC. If you wish to hold a DTC screen, press ↓ to freeze the automatic scrolling feature.



8. Press ENTER to view a summary screen of all entered DTCs.



9. Press EXIT to return to the DTC menu.

ACTIVE KEYS	
ENTER	Enter the displayed DTC. Also display summary screen.
YES	Enter another DTC.
NO	Advance to instruction screen.
F0 - F9	Enter DTC number.
↑	Move to the next DTC.
↓	Stop the automatic scrolling.
EXIT	Return to DTC menu.

Submode F5: Sens DTC

The Sensitive DTC test submode applies to Lexus engine controllers and is only available when the engine system is Active.

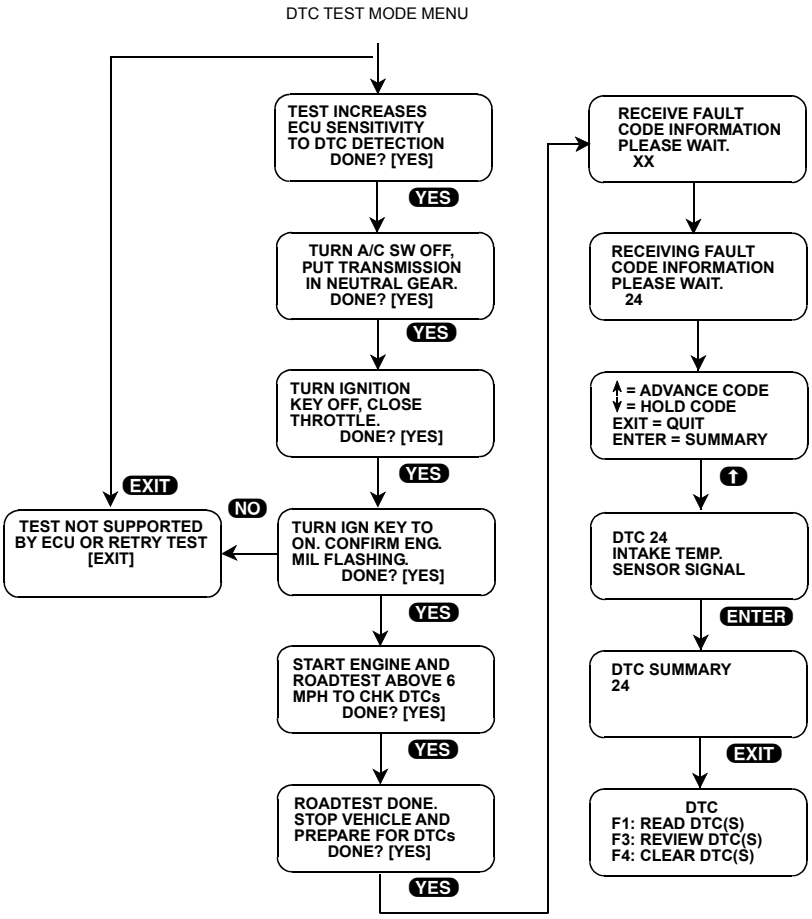
Lexus engine ECUs have the capability to enter an increased sensitivity mode to detect fault code conditions. The SENS DTC submode is helpful for diagnosing intermittent problems. If you are using a TECH 1 or TECH 1A tester, power the tester directly from the battery via the optional battery adapter cable (P/N 02001636).

To select Sensitive DTC submode, do the following:

1. Press F2 to select DTCs from the Select Mode menu.
2. Press F5 to select SENS DTC from the DTC menu.
3. The tester displays instructions for preparing the vehicle to capture DTCs in the Sensitive Mode. Follow the instructions on each display, then press YES to continue.
4. When the vehicle preparations are complete, the tester checks for DTCs, then displays the codes on line four.
5. The tester displays instructions for viewing the DTCs. Press ↑ to view the DTCs.
6. The tester displays the first DTC. Press ↑ to scroll through the captured DTCs. A DTC can be held by pressing the ↓ key while the code is displayed. Press the ↑ key to resume display of the DTCs. An example of a DTC display is shown below.
7. Press ENTER to display a summary of the captured DTCs.
8. Press EXIT to return to the DTC menu.

NOTE

In some cases, Lexus ECUs do not support Sensitive DTC Mode. If the tester cannot command the ECU into Sensitive DTC Mode, an information screen is displayed with test status or a message to retry the test.


DTC TEST MODE MENU
TEST INCREASES ECU SENSITIVITY TO DTC DETECTION DONE? [YES]
YES
TURN A/C SW OFF, PUT TRANSMISSION IN NEUTRAL GEAR. DONE? [YES]
YES
TURN IGNITION KEY OFF, CLOSE THROTTLE. DONE? [YES]
YES
TURN IGN KEY TO ON. CONFIRM ENG. MIL FLASHING. DONE? [YES]
NO
TEST NOT SUPPORTED BY ECU OR RETRY TEST [EXIT]
EXIT
YES
START ENGINE AND ROADTEST ABOVE 6 MPH TO CHK DTCs DONE? [YES]
YES
ROADTEST DONE. STOP VEHICLE AND PREPARE FOR DTCs DONE? [YES]
YES
RECEIVE FAULT CODE INFORMATION PLEASE WAIT. XX
RECEIVING FAULT CODE INFORMATION PLEASE WAIT. 24
↑ = ADVANCE CODE
↓ = HOLD CODE
EXIT = QUIT
ENTER = SUMMARY
↑
DTC 24 INTAKE TEMP. SENSOR SIGNAL
ENTER
DTC SUMMARY 24
EXIT
DTC
F1: READ DTC(S)
F3: REVIEW DTC(S)
F4: CLEAR DTC(S)

Example of Sensitive DTC Submode Instructions

ACTIVE KEYS	
↑ ↓	Advance to next DTC or hold displayed DTC.
YES	Confirm instructions on display are completed.
NO	Confirm MIL not flashing.
ENTER	Display DTC Summary.
EXIT	Return to DTC Entry menu.

8. LEXUS DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Lexus vehicles are listed in the following charts.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

AIR BAG

YEAR: 1990-94	DTC NO.	DESCRIPTOR
1990-1994	11	SQUIB W/H GND OR FRNT SENS. SHORT
	12	SQUIB W/H +B SHORT
	13	SQUIB MALF. (SHORT)
	14	SQUIB MALF. (OPEN)
	15	FRONT SENSOR W/H OPEN
	22	WARNING LIGHT CIRCUIT
	24	AIR BAG SENSOR CONNECTION FAIL
	31	SENSOR ASSEMBLY
	41	MALF. RECORDED IN MEMORY
	53	SQUIB SHORT
	54	SQUIB OPEN
	63	SQUIB SHORT (PRELOADER LEFT)
	64	SQUIB OPEN (PRELOADER LEFT)
	73	SQUIB SHORT (PRELOADER RT)
	74	SQUIB OPEN (PRELOADER RT)

ANTI-LOCK BRAKE SYSTEM

YEAR: 1990-94	DTC NO.	DESCRIPTOR
1990-1994	11	SOLENOID RELAY OPEN
	12	SOLENOID RELAY SHORT
	13	PUMP MOTOR RELAY OPEN
	14	PUMP MOTOR RELAY SHORT
	15	TRAC BRAKE MAIN RELAY OPEN

YEAR: 1990-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	16	TRAC BRAKE MAIN RELAY SHORT
	17	TRAC PUMP MOTOR RELAY OPEN
	18	TRAC PUMP MOTOR RELAY SHORT
	21	RF SOLENOID OPEN OR SHORT
	22	LF SOLENOID OPEN OR SHORT
	23	RR SOLENOID OPEN OR SHORT
	24	LR SOLENOID OPEN OR SHORT
	25	MASTER CYL. CUT SOL. OPEN/SHORT
	26	ACCUMULATOR CUT SOL. OPEN/SHORT
	27	RESERVOIR CUT SOL. OPEN/SHORT
	31	RF SPEED SENSOR MALFUNCTION
	32	LF SPEED SENSOR MALFUNCTION
	33	RR SPEED SENSOR MALFUNCTION
	34	LR SPEED SENSOR MALFUNCTION
	35	LF/RR SPEED SENS MALFUNCTION
	36	RF/LR SPEED SENS MALFUNCTION
	37	SPD SENSOR ROTOR WHEEL FAILURE
	38	RR SPEED SENSOR MALFUNCTION
	39	LR SPEED SENSOR MALFUNCTION
	41	VOLTAGE MALFUNCTION
	42	HIGH VOLTAGE
	43	TRAC SYS/DECEL. SENSOR MALF.
	44	DECELERATION SENS. OPEN/SHORT
	45	DECELERATION SENSOR MALF.
	46	DECELERATION SENSOR MALF.
	47	DECELERATION SENSOR MALF.
	51	ACTUATOR PUMP MOTOR LOCKED
	53	TRAC MOTOR OVER- OPERATING (DUR.)
	54	TRAC MOTOR OVER- OPERATING (FREQ)
	55	LOW BRAKE FLUID LEVEL
	56	PRESSURE SENSOR OPEN OR SHORT
	57	PRESSURE SENSOR STICKING

YEAR: 1990-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	61	TRAC ECU COM. LINE OPEN/SHORT
	62	ECU MALFUNCTION
	71	RF SENSOR LOW VOLTAGE
	72	LF SENSOR LOW VOLTAGE
	73	RR SENSOR LOW VOLTAGE
	74	LR SENSOR LOW VOLTAGE
	75	RF SENSOR ABNORMAL FREQ.
	76	LF SENSOR ABNORMAL FREQ.
	77	RR SENSOR ABNORMAL FREQ.
	78	LR SENSOR ABNORMAL FREQ.
	79	DECELERATION SENSOR MALF.

AIR CONDITIONING

YEAR: 1990-94	DTC NO.	DESCRIPTOR
1990-1994	11	ROOM TEMP SENSOR OPEN OR SHORT
	12	AMBIENT TEMP. SENS. OPEN/SHORT
	13	EVAPORATOR TEMP. SENS. OPEN/SHORT
	14	WATER TEMP. SENS. OPEN/SHORT
	15	DUCT SENSOR OPEN/SHORT (Dr)
	16	DUCT SENSOR OPEN/SHORT (Pa)
	21	SOLAR SENSOR OPEN/SHORT (Pa)
	22	COMPRESSOR LOCKED
	23	REFRIGERANT PRESS MALFUNCTION
	24	SOLAR SENSOR OPEN/SHORT (Dr)
	31	AIR MIX POSITION SENSOR
	32	AIR INLET POSITION SENSOR
	33	AIR MIX MALF. OR MODE POTEN. SIG.
	34	AIR INLET MALFUNCTION
	35	AIR BYPASS POS. SENSOR (Pr)
	36	WATER VALVE POSITION SENSOR
	41	AIR MIX MALFUNCTION

YEAR: 1990-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	42	AIR INLET MALFUNCTION
	43	MODE MALFUNCTION
	44	AIR BYPASS POS. SENSOR (Dr)
	45	AIR BYPASS POS. SENSOR (Pa)
	46	WATER VALVE POSITION SENSOR

CRUISE CONTROL SYSTEM

YEAR: 1990-94	DTC NO.	DESCRIPTOR
1990-1994	11	ACTUATOR MALF. (OPEN OR SHORT)
	12	CC MAG. CLUTCH RELEASE VLV FAIL
	13	POSITION SENSOR (OPEN OR SHORT)
	14	ACTUATOR POS. SENSOR MALF.
	21	VEHICLE SPD SENS SIGNAL (METER)
	22	VEHICLE SPD SENS SIGNAL (T/M)
	23	SPEED DECREASED 10 mph (16 Km/h)
	31	RESUME SWITCH ALWAYS ON
	32	CONTROL SWITCH GROUND SHORT
	33	SET & RES SW. ON SIMULTANEOUSLY
	34	CONTROL SWITCH OFF MALFUNCTION
	41	MOTOR ACTUATE MALFUNCTION
	42	SOURCE VOLTAGE DROP

ELECTRONIC CONTROLLED TRANSMISSION

YEAR: 1990-94	DTC NO.	DESCRIPTOR
1990-1994	37	DIRECT CLUTCH SPD SENSOR SIG.
	38	ATF TEMP. SENSOR SIGNAL
	41	THROTTLE POSITION SENSOR
	42	SPD SENSOR SIGNAL (METER)
	44	SPEED SENSOR REAR

YEAR: 1990-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	46	ACCUMULATOR CONTROL SOLENOID
	61	SPD SENSOR SIGNAL (T/M)
	62	NO.1 SHIFT CONTROL SOLENOID
	63	NO.2 SHIFT CONTROL SOLENOID
	64	LOCK-UP CONTROL SOLENOID
	65	TIMING SOLENOID
	67	OD DIRECT CLUTCH SPD SENSOR SIG.
	68	KICK-DOWN SWITCH
	73	DIFF. LOCK SOLENOID OPEN
	74	DIFF. LOCK SOLENOID OPEN
	76	NO.3 SHIFT CONTROL SOLENOID
	86	ENGINE SPEED SENSOR
	88	COMMUNICATION ERROR (TCM-ECM)

ENGINE

YEAR: 1990-94	DTC NO.	DESCRIPTOR
1990-1994	11	ECU (B+)
	12	RPM SIGNAL (CRANKING)
	13	RPM SIGNAL OR PHASE MALF.
	14	IGNITION SIGNAL (IGF1)
	15	IGNITION SIGNAL (IGF2)
	16	AT CONTROL SIGNAL
	17	G1 SIGNAL
	18	G2 SIGNAL
	21	MAIN O2S SIGNAL (& HEATER) FAIL
	22	COOLANT TEMP. SENSOR SIGNAL
	23	INTAKE TEMP. SENSOR SIGNAL
	24	INTAKE TEMP. SENSOR SIGNAL
	25	AIR-FUEL RATIO LEAN MALFUNCTION
	26	AIR-FUEL RATIO RICH MALFUNCTION
	27	SUB LH O2S SIG. (& HEATER) FAIL

YEAR: 1990-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	28	MAIN O2S SIGNAL (& HEATER) FAIL
	29	SUB RH O2S SIG. (& HEATER) FAIL
	31	VAF/MAF METER MAP SENSOR SIG.
	32	VAF METER SIGNAL
	33	IAC MALFUNCTION
	34	TURBO PRESSURE MALFUNCTION
	35	BARO/TURBO PRESS SENSOR SIGNAL
	36	CPS SENSOR
	41	THROTTLE POS. SENSOR SIGNAL
	42	VEHICLE SPEED SENSOR SIGNAL
	43	STARTER SIGNAL
	47	SUB THROTTLE POS. SENSOR SIGNAL
	48	AIR PUMP (EAP) MALFUNCTION
	51	SWITCH CONDITION SIGNAL
	52	KNOCK SENSOR SIGNAL
	53	KNOCK CONTROL PART IN ECU
	54	INTERCOOLER
	55	KNOCK SENSOR SIGNAL
	56	COOLING FAN PRESSURE SWITCH
	71	EGR SYSTEM MALFUNCTION
	72	AIR CONDITIONER RELAY OPEN
	78	FUEL PUMP CONTROL SIGNAL
	79	FUEL PUMP CONTROL SIGNAL
	81	TCM COMM. (ECT1)
	83	TCM COMM. (ESA1)
	84	TCM COMM. (ESA2)
	85	TCM COMM. (ESA3)

9. DATA LIST PARAMETER DESCRIPTIONS

The Asian Imports Cartridge is capable of displaying a wide variety of ECU parameters in Data List and Snapshot.

This section provides a description of every parameter that can be displayed for Lexus vehicles. Remember, not all models are capable of displaying all parameters. Only parameters available for the selected vehicle are displayed by the tester.

There are two basic types of ECM parameters: discrete and analog. Discrete parameters are 'bits' of information and can be in only one of two distinct states (on/off, open/closed, etc.). Switches and solenoids are examples of discrete parameters. Analog parameters are used to represent quantities and are displayed as a value with appropriate units. Examples of analog parameters include Engine Speed, Coolant Temperature, Oxygen Sensor Voltage, etc.

A/C CLUTCH SIG.

STATES
ON/OFF

Air Conditioning switch status as input to vehicle ECM; based on state of dashboard A/C switch position. ON=A/C commanded on, OFF= A/C commanded off.

AFM OUTPUT A/F METER RATIO

UNITS	RANGE
m^3/h	0 – 255 m^3/h

Air Flow Meter (AFM) output signal sent as an input to vehicle ECM (from the Air Flow Meter) and calculated into cubic meter/hour by the ECM; based on the rate of air flow through the AFM.

AFM OUTPUT A/F METER RATIO

UNITS	RANGE
VOLTS	0 – 5V

Air Flow Meter (AFM) output voltage signal sent to the vehicle ECM from the Air Flow Meter; based on the rate of air flow through the AFM.

AFM SIG. PERIOD

UNITS	RANGE
mS	0 – 66

Time period of Karman-Vortex airflow meter sent as an input to the vehicle ECM from the Karman-Vortex airflow meter; based on the rate of air flow through the KV-AFM

CRANK SIGNAL

STATES
ON/OFF

Crank (starter motor) signal input as sent to vehicle ECU during engine cranking. ON=crank switch on, OFF=crank switch off.

DTC RESULT

STATES
SET/NOT SET

Result of ECM diagnostic self-test which checks for malfunction codes. NOT SET=no diagnostic trouble codes, SET=ECM has detected and stored diagnostic trouble codes.

ENG. COOLANT TMP (DEGREES)

UNITS	RANGE
DEGREES F	-58 – +260
DEGREES C	-50 – +127

Engine Coolant Temperature input as sent to the vehicle ECM and calculated by the ECM; based on cooling system thermostat condition and engine operation mode.

ENGINE SPEED

UNITS	RANGE
RPM	0 – 10000

Engine Speed signal as input to the vehicle ECU and calculated by the ECU; based on the signal from the distributor pulse generator.

IDLE SWITCH

STATES
ON/OFF

Idle Switch signal status as sent to the vehicle ECM; based on idle switch state in throttle position sensor. ON=switch closed (engine idling), OFF=switch open (engine off-idle).

NOTE: When testing the idle switch make sure the engine is running.

INJECTOR P/W

UNITS	RANGE
mS	0 – 33

Injector solenoid Pulse Width (on-time) based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

INTAKE AIR PRES.

UNITS	RANGE
mmHg	0 – 1244

Intake Air Pressure/Vacuum signal sent as an input to the vehicle ECM from the MAP/VAC sensor; based on engine load.

INTAKE AIR VOL.

UNITS	RANGE
g/S	0 – 510

Intake Air Volume is a measure of engine intake air volume through the air Flow Meter in grams per second (g/s). The more throttle opening, the greater intake air volume into the engine. This parameter applies to AFM equipped engines only.

ISC DUTY RATIO

UNITS	RANGE
%	0 – 100

Idle Speed Control (ISC) valve percentage opening based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

ISC VALVE

UNITS	RANGE
STEPS	0 – 215

Idle Speed Control (ISC) valve step based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

KNOCK SIGNAL

STATES
ON/OFF

Knock sensor signal correction as commanded by vehicle ECM; based on engine load and indicates that the ECM advance/retard strategy is controlling ignition timing. ON=correction enabled, OFF= correction disabled.

LEAN MIX SENSOR

UNITS	RANGE
mA	0 – 72

Lean mixture sensor current as input to the vehicle ECM; based on air-fuel ratio (O2 content) of exhaust gases.

LEFT A/F FB

STATES
ON/OFF

Left side air-fuel feedback signal state as commanded by vehicle ECM; based on engine load and left O2 sensor signal inputs to ECM. ON=feedback enabled, OFF=feedback disabled.

LEFT A/F TARGET

UNITS	RANGE
VOLTS	0 – 5V

Target (commanded) air fuel ratio in left-hand exhaust manifold as calculated by vehicle ECM.

LEFT O2S SIGNAL

STATES
RICH/LEAN

Left Oxygen Sensor state flag based on input to vehicle ECU; based on oxygen content in left exhaust stream, RICH=air fuel ratio above 14.7, LEAN=air fuel ratio below 14.7:1.

NEUTRAL SWITCH

STATES
P-N--/-R-DL

Neutral Safety switch status as input to vehicle ECM, based on the current gear selection of the transmission. P-N-- = current gear is PARK or NEUTRAL, -R-DL = current gear is REVERSE, DRIVE, or LOW.

RIGHT A/F FB

STATES
ON/OFF

Right side air-fuel feedback signal state as commanded by vehicle ECM; based on engine load and right O2 sensor signal inputs to ECM. ON=feedback enabled, OFF=feedback disabled.

RIGHT A/F TARGET

UNITS	RANGE
VOLTS	0 – 5V

Target (commanded) air fuel ratio in right-hand exhaust manifold as calculated by vehicle ECM.

RIGHT O2S SIGNAL

STATES
RICH/LEAN

Right Oxygen Sensor state flag based on input to vehicle ECU; based on oxygen content in right exhaust stream, RICH=air fuel ratio above 14.7, LEAN=air fuel ratio below 14.7:1.

SPARK ADVANCE

UNITS	RANGE
DEGREES	-30 – +90

Ignition timing Spark Advance or Retard signal based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

THROTTLE ANGLE

UNITS	RANGE
DEGREES	0 – 125

Angle of throttle plate in throttle body as sent to the vehicle ECM and calculated by the ECM; based on current position of throttle position sensor.

VEHICLE SPEED

UNITS	RANGE
MPH	0 – 125

Vehicle speed signal as input to vehicle ECM and calculated by the ECM; based on vehicle speed sensor input.

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1. VEHICLES AND SYSTEMS

Using the Asian cartridge, the following Mazda vehicles can be diagnosed.

MODEL: 1983-89	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1983					
GLC	1.5L I4	CARB	E5	CHECK	AUTOCODES
626	2.0L I4	CARB	FE	CHECK	AUTOCODES
1984					
GLC	1.5L I4	CARB	E5	CHECK	AUTOCODES
626	2.0L I4	CARB	FE	CHECK	AUTOCODES
RX7	1.3L R2	EGI EFI	13B	CHECK	AUTOCODES
1985					
GLC	1.5L I4	CARB	E5	CHECK	AUTOCODES
626	2.0L I4	CARB	FE	CHECK	AUTOCODES
RX7	1.3L R2	EGI EFI	13B	CHECK	AUTOCODES
1986					
323	1.6L I4	EGI EFI	B6	CHECK	AUTOCODES
626	2.0L I4	EGI EFI	FE	CHECK	AUTOCODES
626	2.0L I4 TURBO	EGI EFI	FE	CHECK	AUTOCODES
RX7	1.3L R2	EGI EFI	RE13B	CHECK	AUTOCODES
B2000	2.0L I4	CARB	FE	CHECK	AUTOCODES
1987					
323	1.6L I4	EGI EFI	B6	CHECK	AUTOCODES
323 WAGON	1.6L I4	EGI EFI	B6	CHECK	AUTOCODES
626	2.0L I4	EGI EFI	FE	CHECK	AUTOCODES
626	2.0L I4 TURBO	EGI EFI	FE	CHECK	AUTOCODES
RX7	1.3L R2	EGI EFI	RE13B	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	EGI EFI	RE13B	CHECK	AUTOCODES
B2200	2.2L I4	CARB	F2	CHECK	AUTOCODES
1988					
323/PROTEGÉ	1.6L I4	EGI EFI	B6	CHECK	AUTOCODES
323/PROTEGÉ	1.6L I4 TURBO	EGI EFI	B6	CHECK	AUTOCODES

MODEL: 1983-89	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
323 WAGON	1.6L I4	EGI EFI	B6	CHECK	AUTOCODES
626/MX6	2.2L I4	EGI EFI	F2	CHECK	AUTOCODES
626/MX6	2.2L I4 TURBO	EGI EFI	F2	CHECK	AUTOCODES
929	3.0L V6	EGI EFI	JE	CHECK	AUTOCODES
RX7	1.3L R2	EGI EFI	RE13B	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	EGI EFI	RE13B	CHECK	AUTOCODES
B2200	2.2L I4	CARB	F2	CHECK	AUTOCODES
1989					
323	1.6L I4 E	EGI EFI	B6	CHECK	AUTOCODES
323	1.6L IL TURBO	EGI EFI	B6	CHECK	AUTOCODES
323 WAGON	1.6L I4	EGI EFI	B6	CHECK	AUTOCODES
626/MX6	2.2L I4	EGI EFI	F2	CHECK	AUTOCODES
626/MX6	2.2L I4 TURBO	EGI EFI	F2	CHECK	AUTOCODES
929	3.0L V6	EGI EFI	JE	CHECK	AUTOCODES
MPV	2.6L I4	EGI EFI	G6	CHECK	AUTOCODES
MPV	3.0L V6	EGI EFI	JE	CHECK	AUTOCODES
RX7	1.3L R2	EGI EFI	RE13B	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	EGI EFI	RE13B	CHECK	AUTOCODES
B2200	2.2L I4	CARB	F2	CHECK	AUTOCODES
B2600i	2.6L I4	EGI EFI	G6	CHECK	AUTOCODES

MODEL: 1990	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1990					
323/PROTEGÉ	1.6L I4	EGI MFI	B6	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 DOHC	EGI MFI	BP	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 SOHC	EGI MFI	BP	CHECK	AUTOCODES
626/MX6	2.2L I4	EGI MFI	F2	CHECK	AUTOCODES
626/MX6	2.2L I4 TURBO	EGI MFI	F2	CHECK	AUTOCODES
929	3.0L V6 DOHC	EGI MFI	JE	CHECK	AUTOCODES
929	3.0L V6 SOHC	EGI MFI	JE	CHECK	AUTOCODES

MODEL: 1990 (CONTINUED)	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
MPV	3.0L V6	EGI MFI	JE	CHECK	AUTOCODES
MPV	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES
MX5/MIATA	1.6L I4	EGI MFI	B6	CHECK	AUTOCODES
RX7	1.3L R2	EGI MFI	RE13B	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	EGI MFI	RE13B	CHECK	AUTOCODES
B2200	2.2L I4 E	EGI MFI	F2	CHECK	AUTOCODES
B2200	2.2L I4	CARB	F2	CHECK	AUTOCODES
B2600i	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES

MODEL: 1991	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1991					
323/PROTEGÉ	1.6L I4 SOHC	EGI MFI	B6	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 SOHC	EGI MFI	BP	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 DOHC	EGI MFI	BP	CHECK	AUTOCODES
626/MX6	2.2L I4	EGI MFI	F2	CHECK	AUTOCODES
626/MX6	2.2L I4 TURBO	EGI MFI	F2	CHECK	AUTOCODES
929	3.0L V6 SOHC	EGI MFI	JE	CHECK	AUTOCODES
929	3.0L V6 DOHC	EGI MFI	JE	CHECK	AUTOCODES
NAVAJO	4.0L V6	MFI	X	NONE	FORDCODES
MPV	3.0L V6	EGI MFI	JE	CHECK	AUTOCODES
MPV	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES
MX5/MIATA	1.6L I4	EGI MFI	B6	CHECK	AUTOCODES
RX7	1.3L R2	EGI MFI	RE13B	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	EGI MFI	RE13B	CHECK	AUTOCODES
B2200	2.2L I4	EGI MFI	F2	CHECK	AUTOCODES
B2200	2.2L I4	CARB	F2	CHECK	AUTOCODES
B2600i	2.6L I4	EGI EFI	G6	CHECK	AUTOCODES

MODEL: 1992	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1992					
323/PROTEGÉ	1.6L I4 SOHC	EGI MFI	B6	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 SOHC	EGI MFI	BP	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 DOHC	EGI MFI	BP	CHECK	AUTOCODES
626/MX6	2.2L I4	EGI MFI	F2	CHECK	AUTOCODES
626/MX6	2.2L I4 TURBO	EGI MFI	F2	CHECK	AUTOCODES
929	3.0L V6	EGI MFI	JE	CHECK	AUTOCODES
NAVAJO	4.0L V6	MFI	X	NONE	FORDCODES
MX3	1.6L I4 SOHC	EGI MFI	B6	CHECK	AUTOCODES
MX3	1.8L I4 DOHC	EGI MFI	K8	CHECK	AUTOCODES
MPV	3.0L V6	EGI MFI	JE	CHECK	AUTOCODES
MPV	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES
MX5/MIATA	1.6L I4	EGI MFI	B6	CHECK	AUTOCODES
B2200	2.2L I4	CARB	F2	CHECK	AUTOCODES
B2200	2.2L I4	EGI MFI	F2	CHECK	AUTOCODES
B2600i	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES

MODEL: 1993	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1993					
323/PROTEGÉ	1.6L I4 SOHC	EGI MFI	B6	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 SOHC	EGI MFI	BP	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 DOHC	EGI MFI	BP	CHECK	AUTOCODES
626/MX6	2.0L I4	EGI MFI	FS	CHECK	AUTOCODES
626/MX6	2.5L V6	EGI MFI	KL	CHECK	AUTOCODES
929	3.0L V6	EGI MFI	JE	CHECK	AUTOCODES
NAVAJO	4.0L V6	MFI	X	NONE	AUTOCODES
MPV	3.0L V6	EGI MFI	JE	CHECK	AUTOCODES
MPV	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES
MX3	1.8L V6	EGI MFI	K8	CHECK	AUTOCODES

MODEL: 1993 (CONTINUED)	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
MX3	1.6L I4	EGI MFI	B6	CHECK	AUTOCODES
MX5/MIATA	1.6L I4	EGI MFI	B6	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	EGI MFI	13B	CHECK	AUTOCODES
B2200	2.2L I4	CARB	F2	CHECK	AUTOCODES
B2200	2.2L I4	EGI MFI	F2	CHECK	AUTOCODES
B2600i	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES

MODEL: 1994	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1994					
323/PROTEGÉ	1.6L I4 SOHC	EGI MFI	B6	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 SOHC	EGI MFI	BP	CHECK	AUTOCODES
323/PROTEGÉ	1.8L I4 DOHC	EGI MFI	BP	CHECK	AUTOCODES
626/MX6 (M/T)	2.0L I4	EGI MFI	FS	CHECK	AUTOCODES
626/MX6 (A/T)	2.0L I4	MFI	FS	NONE	FORDCODES
626/MX6	2.5L V6	EGI MFI	KL	CHECK	AUTOCODES
929	3.0L V6 DOHC	EGI MFI	JE	CHECK	AUTOCODES
NAVAJO	4.0L V6	MFI	X	NONE	FORDCODES
MPV	3.0L V6	EGI MFI	JE	CHECK	AUTOCODES
MPV	2.6L I4	EGI MFI	G6	CHECK	AUTOCODES
MX3	1.6L I4	EGI MFI	B6	CHECK	AUTOCODES
MX3	1.8L I4 DOHC	EGI MFI	K8	CHECK	AUTOCODES
MX5/MIATA	1.8L I4 DOHC	EGI MFI	BP	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	EGI MFI	13B	CHECK	AUTOCODES
B SERIES	2.3L I4	MFI	A	NONE	FORDCODES
B SERIES	3.0L V6	MFI	U	NONE	FORDCODES
B SERIES	4.0L V6	MFI	X	NONE	FORDCODES

MODEL: 1995	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1995					
323/PROTEGÉ	1.8L I4	EFI	BP	OBD II*	AUTOCODES
323/PROTEGÉ	1.5L I4	EFI	Z5	OBD II*	AUTOCODES
626/MX6	2.0L DOHC	SFI	FS	CHECK	AUTOCODES
626/MX6	2.5L DOHC	SFI	KL	CHECK	AUTOCODES
929	3.0L V6 DOHC	SFI	JE	CHECK	AUTOCODES
MPV	3.0L V6 DOHC	CIS	JE	CHECK	AUTOCODES
MPV	2.6L I4	MFI	G6	CHECK	AUTOCODES
MX3	1.6L I4	SFI	B6	CHECK	AUTOCODES
MX3	1.8L V6	SFI	K8	CHECK	AUTOCODES
MX5/MIATA	1.8L I4 DOHC	SFI	BP	CHECK	AUTOCODES
RX7	1.3L R2 TURBO	SFI	13B	CHECK	AUTOCODES
B SERIES	2.3L I4	EFI		OBD II*	AUTOCODES
B SERIES	3.0L V6	EFI		OBD II*	AUTOCODES
B SERIES	4.0L V6	EFI		OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL: 1996	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1996					
PROTEGÉ	1.5L I4	EFI	Z5	OBD II*	AUTOCODES
PROTEGÉ	1.8L I4	EFI	BP	OBD II*	AUTOCODES
MILLENIA	2.5L V6	EFI	KL	OBD II*	AUTOCODES
MILLENIA	2.3L V6	EFI-MILLER	KJ	OBD II*	AUTOCODES
MPV	3.0L V6	EFI	JE	OBD II*	AUTOCODES
MX5/MIATA	1.8L I4	SFI	BP	OBD II*	AUTOCODES
MX6	2.0L I4	SFI	FS	OBD II*	AUTOCODES
MX6	2.5L V6	SFI	KL	OBD II*	AUTOCODES
626	2.0L I4	SFI	FS	OBD II*	AUTOCODES

MODEL: 1996 (CONTINUED)	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
626	2.5L V6	SFI	KL	OBD II*	AUTOCODES
B SERIES	2.3L I4	EFI		OBD II*	AUTOCODES
B SERIES	3.0L V6	EFI		OBD II*	AUTOCODES
B SERIES	4.0L V6	EFI		OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL: 1997	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1997					
B SERIES	2.3L I4	EFI		OBD II*	AUTOCODES
B SERIES	3.0L V6	EFI		OBD II*	AUTOCODES
B SERIES	4.0L V6	EFI		OBD II*	AUTOCODES
MILLENIA	2.3L V6	EFI-MILLER	KJ	OBD II*	AUTOCODES
MILLENIA	2.5L V6	EFI	KL	OBD II*	AUTOCODES
MPV	3.0L V6	EFI	JE	OBD II*	AUTOCODES
MX5/MIATA	1.8L I4	SFI	BP	OBD II*	AUTOCODES
MX6	2.0L I4	SFI	FS	OBD II*	AUTOCODES
MX6	2.5LV6	SFI	KL	OBD II*	AUTOCODES
PROTEGÉ	1.5L I4	EFI	Z5	OBD II*	AUTOCODES
PROTEGÉ	1.8L I4	EFI	BP	OBD II*	AUTOCODES
626	2.0L I4	SFI	FS	OBD II*	AUTOCODES
626	2.5LV6	SFI	KL	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL: 1998	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1998					
B SERIES	2.5L I4	EFI		OBD II*	AUTOCODES
B SERIES	3.0L V6	EFI		OBD II*	AUTOCODES

MODEL: 1998 (CONTINUED)	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
B SERIES	4.0L V6	EFI		OBD II*	AUTOCODES
MILLENIA	2.5L V6	MEFI	KL	OBD II*	AUTOCODES
MILLENIA	2.3L V6	MEFI-MILLER	KJ	OBD II*	AUTOCODES
MPV	3.0L V6	MEFI	JE	OBD II*	AUTOCODES
MX5/MIATA	1.8L I4	MEFI	BP	OBD II*	AUTOCODES
PROTEGÉ	1.5L I4	MEFI	Z5	OBD II*	AUTOCODES
PROTEGÉ	1.8L I4	MEFI	BP	OBD II*	AUTOCODES
626	2.0L I4	MEFI	FS	OBD II*	AUTOCODES
626	2.5L V6	MEFI	KL	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL: 1999	ENGINE	FUEL TYPE	ENGINE TYPE	ADAPTER TYPE	CODE TYPE
1999					
MX5/MIATA	1.82L I4	MEFI	BP	OBD II*	AUTOCODES

* For OBD II Adapter Type use Common Test Modes OBD II Systems section for operating instructions and test mode information.

2. MAZDA SPECIFIC INFORMATION

The Mazda vehicles covered by the Asian Imports Cartridge are separated into two different sections within the Asian Imports Operator's Manual. The vehicle's on-board system will determine which section of the Operator's Manual will need to be used. Vehicles that are OBD II certified have information about the operating test modes in the Common Test Modes OBD II Systems section of the Operator's Manual. Vehicles that have OBD or OBDI systems have test mode information in this section of the Operator's Manual. In these sections, you will find information on test modes available, how to connect the tester to the vehicle, and operating instructions for the different test modes. A complete list of Mazda Diagnostic Trouble Codes is included at the back of each section.

To determine which section of the Operator's Manual to use for diagnostic information and instructions, look at Adapter Type of the Vehicle and Systems chart. If the vehicle you are testing has an OBD II adapter type, use the Common Test Modes OBD II Systems section of the Operator's Manual. If the vehicle you are testing does not have the OBD II Adapter Type, use this section to diagnose the vehicle under test.

3. TEST MODES AVAILABLE

The following test modes are available when testing Mazda vehicles. Operating instructions for test modes other than the DTC Entry, DTCs, and OBD Controls are included in the Common Test Modes OBD, OBD I Systems section. There are Mazda specific instructions for operating the test modes in Mazda, Sections 6 and7.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F2: DTC

SUBMODE F1: READ DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F4: OBD CONTROLS

SUBMODE F0: SWITCH TEST
SUBMODE F1: O2S MONITOR

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

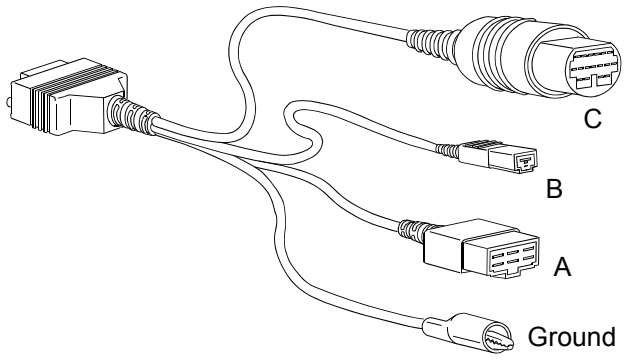
MODE F8: INFORMATION

SUBMODE F1: DLC LOCATION
SUBMODE F3: ID INFO

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Mazda vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Refer to the Vehicles and Systems table to see if the vehicle you are testing requires the Check Adapter Cable. If so, connect the Mazda Check Adapter Cable to the end of the DLC cable, then connect the orange connector end to the vehicle check connector.



Mazda Check Adapter Cable

3. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery clip adapter (P/N 02001636).

NOTE

Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery clip adapter.

4. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester Stand-alone Diaplay

5. If the display is correct, press **ENTER**. If the display is not correct, refer to Appendix D.
6. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

CAUTION!

When removing the Mazda Check Adapter Cable from the vehicle DLC, remember to depress the retaining tab on the vehicle DLC. Failure to do so could cause wiring harness damage.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite Mazda.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE AND ENGINE TYPE

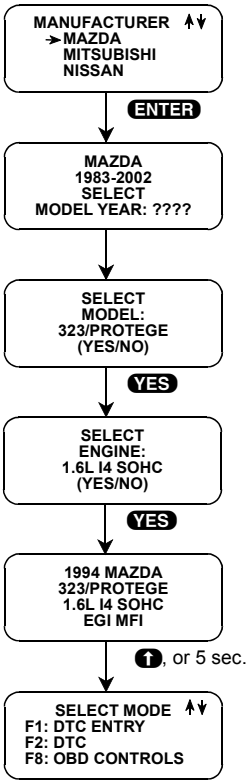
Next, the Engine Select menu is displayed. For selected vehicles, you will also be asked to select the fuel type, such as EGI MFI. Press NO until the engine and fuel type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle is selected, the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to Sections 6 (Test Modes), 7 (OBD Controls), and the Common Test Modes OBD, OBD I Systems section for instructions on operating the test modes with Mazda vehicles.



Mazda Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester diaplay.
EXIT	Return to previous display.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Mazda vehicles may be selected.

Operating instructions for test modes other than DTC ENTRY, DTCs, and OBD CONTROLS are included in the Common Test Modes OBD, OBD I Systems section. You may select Mode F1: DTC Entry, Mode F5: System Tests, and Mode F8: Information without connecting the tester to the vehicle.

READING CODES

Detailed operating instructions for using Modes F1: DTC Entry and F2: DTC with Mazda vehicles are included in the following procedure. Remember that F2: DTC is automatically displayed with Mazda vehicles that have "CHECK" as the adapter type listed in Section 1.

Operating instructions for Mode F4: OBD Controls are included in Section 7.

IMPORTANT

Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

MODE F1: DTC ENTRY

When Mode F1: DTC Entry is selected, the tester displays submodes which, after your selection, can provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

DTC ENTRY SUBMODES

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Manually Reading DTCs

To manually read Diagnostic Trouble Codes (DTCs) on Mazda vehicles from 1983-95, there is a single method that should be used. This requires an analog voltmeter and a single wire jumper that is placed across a self test input pin to ground of the 1 pin or 17 pin DLC. Using the analog voltmeter set to a 20 volt scale and connected to the self test output pin of the Data Link Connector (DLC), the DTC can be interpreted from the analog voltmeter needle flashes.

For the automobile manufacturers that mention the use of an analog voltmeter to read manual DTCs, the Mastertech Oscilloscope may be used. Set up the single channel oscilloscope and make connections the same way as the analog voltmeter (above). Choose the 20v/division scale and a slow time/division (e.g., 1-2 sec/division) the DTCs will be shown as a waveform on the display.

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the manual for this information, make sure that you are following the correct steps for the system that you are working on.

Submode F1: Enter DTC(s)

On Mazda vehicles, the Enter DTCs submode allows you to enter manually read DTCs. This submode provides you with a text description of the numeric DTC that was entered into the tester.

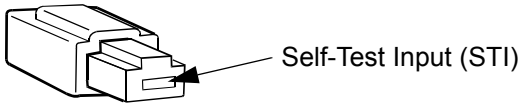
The Enter DTC Submode displays two question marks for DTC Entry. The tester screen prompts you to enter the DTCs read from the analog voltmeter. Be careful when reading the DTC from the analog voltmeter. Incorrect voltmeter needle interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section.

Refer to the appropriate procedure for manually reading ECU DTCs on the following pages.

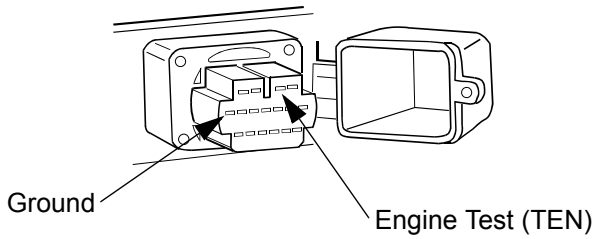
Manually Reading DTCs from Mazda Vehicles using 6 Pin, 1 pin and 6 pin, 17pin DLCs and analog voltmeter:

1. Locate the 1 pin, 6 pin, and 17 pin Diagnostic Connector.

2a. **6 pin and 1 pin DLC only:** Connect a suitable jumper wire from the self test input (STI) terminal 1 pin DLC (single lead, shell color sometimes green or black) to ground.

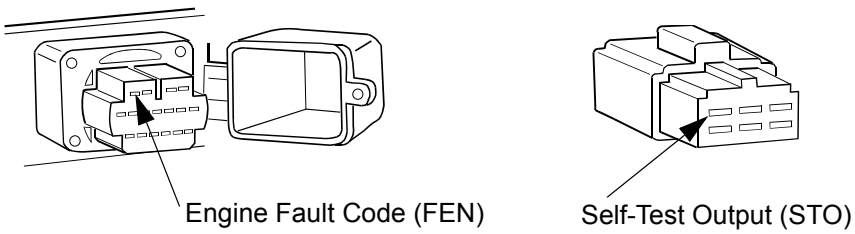


2b. **17 pin DLC only:** Connect a suitable jumper wire from the engine test input (TEN) terminal to ground.



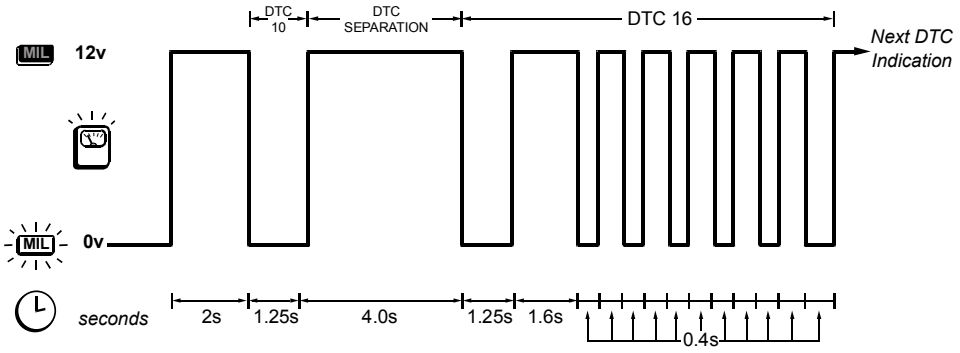
2c. On vehicles with **only the 6 pin DLC**, go to Step 3.

3. Connect analog voltmeter red lead to engine fault code output (FEN or STO) terminal in the 6 pin or 17 pin DLCs (refer to service manual for correct wire) and voltmeter black lead to ground. Set analog voltmeter to 20 volt scale.



4. Turn ignition switch to ON.
5. DTC indication will begin on voltmeter.

   Voltmeter will fluctuate 0 to 12 volts if DTCs are stored in ECU. If a DTC is stored in ECU, the STO line will first indicate 12 volts. The first number of 0 volt, 1.2 second indications will equal the 10's digit of a 2-digit DTC. After a 1.6 second pause, the second number of 0 volt, 0.4 second indications will equal the 1's digit. DTCs are separated by 12 volt indication for 4.0 seconds.



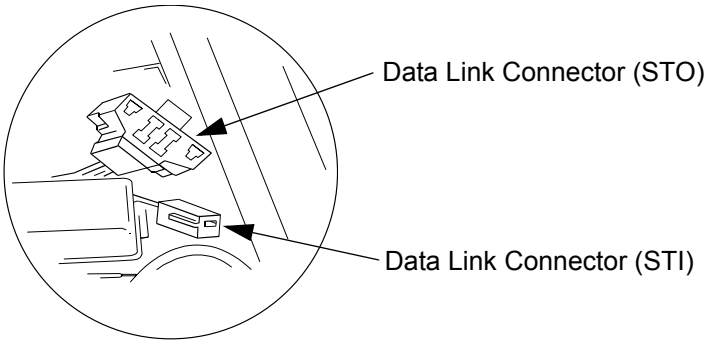
6. If no malfunctions are present, meter will read constant 12 volts.
7. After recording DTCs turn ignition switch off.
8. Disconnect voltmeter and jumper leads.
9. Erase DTCs when all repairs are completed.

NOTE

All connector views are tester side.

Manually Reading DTCs from Mazda Vehicles using Ford EEC-IV engine control system and Ford's 6 pin plus 1 pin Data Link Connector:

1. Locate the 1pin and 6pin Diagnostic Link Connector.



Mazda/Ford Diagnostic Link Connector

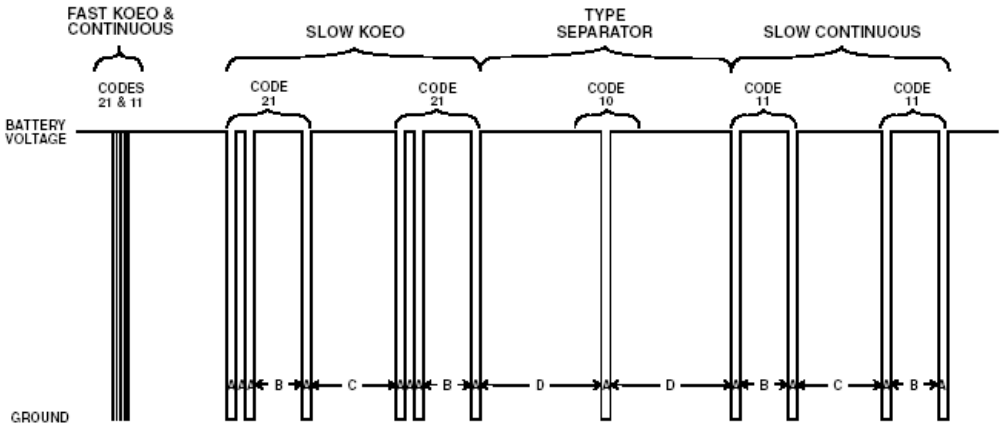
2. 6 pin and 1 pin DLC: connect a suitable jumper wire from the self test input (STI) terminal 1 pin DLC (single lead, shell color gray or black) to ground.
3. **Reading Key On, Engine Off (KOEO) DTCs**: Warm engine to normal operating temperature. Turn the ignition key off and wait 10 seconds. Now turn the ignition key to run.

   DTC indication will begin on dashboard MIL. The dashboard MIL will flash KOEO DTCs first, then a separator code, followed by Continuous DTCs (see Figure M-2). For 3-digit DTCs the first set of MIL flashes will equal the 100s digit. After a 2.0 second pause, the second set of flashes will equal the 10s digit. After another 2.0 second pause, the third set of flashes will equal the 1s digit. Then a 6.0-9.0 second pause between the separator code and KOEO or Continuous DTCs will occur. If there are 2 or more DTCs of the same type, there will be a 4.0 second pause between each DTC. After recording DTCs, turn off ignition switch and disconnect jumper lead from DLC.
4. **Reading Key On, Engine Running (KOER) DTCs**: Warm engine to normal operating temperature. Turn the ignition key off and wait 10 seconds. Now start the engine.
5. DTC indication will begin on dashboard MIL. Rotate steering wheel 1/2 turn, depress and release brake pedal. If a single MIL flash occurs, depress and release throttle pedal. Wait for PCM to exercise all outputs. The dashboard MIL will flash KOER DTCs. For 3-digit DTCs the first set of flashes will equal the 100s digit. After a 2.0 second pause, the second set of flashes will equal the 10s digit. After another 2.0 second pause, the third set of flashes will equal the 1s digit. If there are 2 or more DTCs, there will be a 4.0 second pause between each DTC. After recording DTCs, turn off ignition switch and disconnect jumper lead from DLC.
6. If no malfunctions are present, the MIL will flash DTC 111.
7. Disconnect jumper leads.
8. Erase all DTCs when all repairs are completed.

Manually Clearing DTCs from Mazda Vehicles using Ford EEC-IV engine control system and Ford's 6 pin plus 1 pin Data Link Connector:

1. Turn ignition key off, wait 10 seconds.
2. Connect jumper from STI line in 1-pin DLC to ground.
3. Turn ignition key to run.
4. When MIL begins to flash DTCs, remove jumper from ground. Turn off ignition key, disconnect jumper lead from DLC.
5. Perform KOEO test to confirm that DTCs have been cleared and the system sends a pass DTC. If no malfunctions are present, the MIL will flash DTC 111.

6. Disconnect jumper leads.



Example Of EEC-IV Fast And Slow KOEO and Continuous Codes

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter. You can "Select" the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory from DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

MODE F2: DTC

To read DTCs on all 1983-95 vehicles you will need to locate the vehicle DLC and connect the Mazda Check Adapter to the tester and vehicle.

To locate the DLC, select F1: DLC Location from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

When Mode F2: DTC is selected, the tester displays four DTC submodes:

F1: READ DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

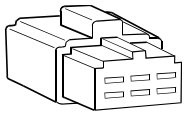
Submode F1: Read DTC(s)

This submode provides automated DTC retrieval from the vehicle ECU. Step by step screen instructions guide you to connect the ORANGE Mazda Check adapter to the vehicle DLC and to start and warm the engine to normal operating temperature. This is performed by following the tester instruction screens. If you have trouble, additional F1: READ DTC(s) retrieval information is described below.

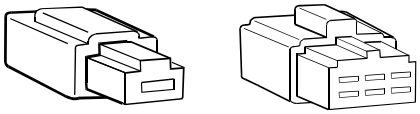
This submode is available for all 1983-95 Mazda vehicles.

NOTE

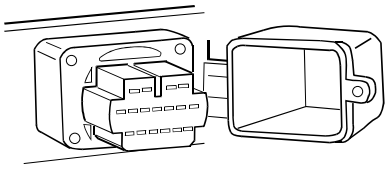
The Orange Mazda CHECK adapter has three DLC connectors and a single ground lead. For engine diagnostics, there are three options to facilitate adapter cable connection.



Single 6 pin DLC -
Use Connector A and ground lead



1 pin and 6 pin DLCs -
Use Connectors A and B and ground lead



Single 17 pin DLC -
Use Connector C and ground lead

(All views are vehicle side)

NOTE

When reading DTC's from Mazda vehicles make sure the engine is at normal operating temperature and testing is performed in a well-ventilated area.

Reading DTCs from all 1983-95 Mazda ECU using the F1: Read DTCs mode in Asian Imports cartridge:

1. Insert Asian cartridge into MASTERTECH or TECH 1A,
2. Connect Mazda Check adapter (Orange) to data link cable. (Tester will display the correct adapter connection to use).
3. Connect the Check adapter to the vehicle DLC. Press F1: DLC location from the Information menu for Data Link Connector location assistance.
4. Connect ground clip to vehicle engine or chassis.
5. Power MASTERTECH or TECH 1A with 12v power cable.
6. Select Mazda vehicle to test.
7. Press F2: DTCs from Mazda test mode menu.
8. Press F1: READ DTCs submode from DTC test menu. Follow instructions on the tester display.
9. Tester will automatically command the vehicle ECU into the correct mode required to read DTCs, and will display all received DTCs on the tester display.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter. You can "Select" the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option 1 is an automated function which the tester clears DTCs from the vehicle ECU memory. This is performed by tester keypad presses. Option 2 clears the tester memory from DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

IMPORTANT

Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

7. OBD CONTROLS

The OBD Controls mode is used to select a submenu of tests applicable to Mazda vehicles. Pressing F4 from the Select Mode menu displays a list of tests available. To return to the Select Mode menu, press EXIT.

Once you have selected the test mode, operation begins. Detailed operating instructions for each OBD Control test are on the following pages.

There are descriptions of two OBD Controls available in the Mazda specific section. Each output control test can provide you with enhanced diagnostic information which will help to pin-point Air-Fuel Ratio (AFR) problems and ECU switch input problems.

Mazda output tests can guide you through ECU Switch Input tests and O2S Monitor tests.

NOTE

Test results may not be accurate when a Tech 1 is used.

MODE F4: OBD CONTROLS

Submode F0: Switch Test

Available on selected 1988-95 Mazda passenger cars and trucks, switch tests can be used to monitor the switch inputs to the engine ECU. On Mazda vehicles, the switch monitor lamp circuit is monitored by the tester during certain test conditions so you can determine switch operation.

When you select a vehicle the available switch tests will be listed in the OBD Controls menu under F0: SWITCH TESTS.

Supported Mazda Switch Tests

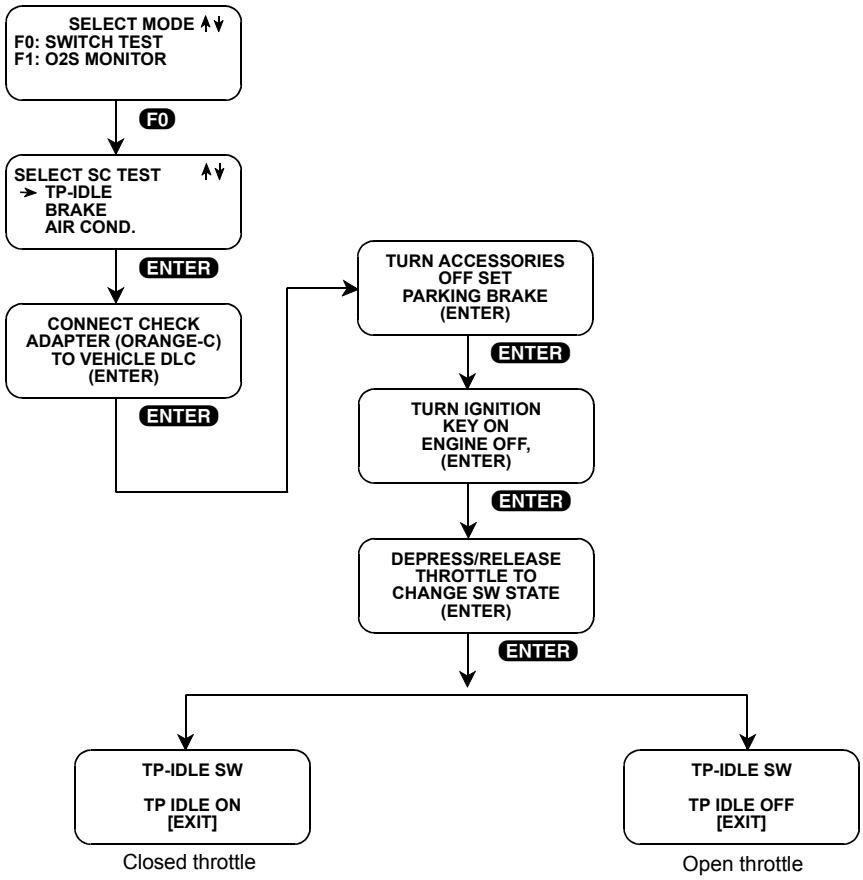
Air Conditioning	A/T Hold
Backup/5th gear	Blower Motor
Brake	Clutch
Cooling Fan	Cooling Fan Relay
Daytime Running Lamp (DRL)	Fog Lamp
Headlamp	Inhibitor (A/T)
Knock	Neutral (M/T)
NO. 1 Thermo	NO. 2 Thermo
Rear Defrost	TP-idle
TP-idle/power	TP-power

NOTE

When performing the Switch Test, make sure the vehicle is properly warmed up and is tested in a well-ventilated area.

To perform the Switch Test, do the following:

1. Press F0 to select Switch Tests from the OBD Controls menu. Press ↑ or ↓ until the → is opposite the desired Switch Test. Then press ENTER.
2. The tester displays instructions for performing the Switch Test. Press ENTER when each step has been completed.
3. Follow the instructions on the tester display. When each instruction is completed, the tester indicates if further action is necessary. If a problem is detected, press EXIT to return to the OBD Controls menu.
4. As a result of following the steps on the display, the tester will monitor and display the switch state. Press EXIT to return to the OBD Controls menu.
5. When finished, press EXIT to return to the OBD Controls menu.



Switch Test

ACTIVE KEYS	
↑ ↓	Scroll Up or Down.
ENTER	Used when each step has been completed.
EXIT	Return to OBD Controls menu.

Notes on Switch Test operation:

If a switch test fails, before replacing a component, check:

- ECM/PCM
- Relay
- Wiring harness
- Switch operation with continuity tester

No. 1 Thermo Switch/No. 2 Thermo Switch requires shorting a terminal contained in the underhood electric fan check connector. See vehicle service manual for more information.

TP idle/power Switch: This test checks the idle and power switches that are built into the throttle position sensor (TP). TP idle switch is ON (contacts closed) at idle, OFF (contacts open) with throttle pedal partially depressed. TP power switch is ON (contacts closed) at wide open throttle (WOT) and OFF (contacts open) with throttle pedal in any other position except fully depressed.

Blower Switch: Note that in certain cases, blower fan switches change state only in the 3rd or 4th position.

A/C Switch: When testing the A/C Switch, the blower switch should be in the 1st position.

Inhibitor Switch: Remember to remove foot from brake pedal before changing gear selector position.

CAUTION!

Make sure parking brake has been set and wheels have been blocked to prevent vehicle motion.

Submode F1: O2S Monitor

The O2S monitor is available on selected 1983-95 Mazda vehicles. To check test application, select the OBD Controls menu for F1: O2S MONITOR as a possible selection. On Mazda vehicles, the switch monitor lamp circuit is monitored with the engine running so you can determine Oxygen Sensor output (rich or lean) states.

The O2S Monitor provides you with a guided procedure which tests the condition of the oxygen sensor (the oxygen sensor, known as O2S, is mounted in the engine exhaust system and is in direct contact with the exhaust gases. The O2S changes its output according to the rich or lean condition of the O2 present in the exhaust gases).

NOTE

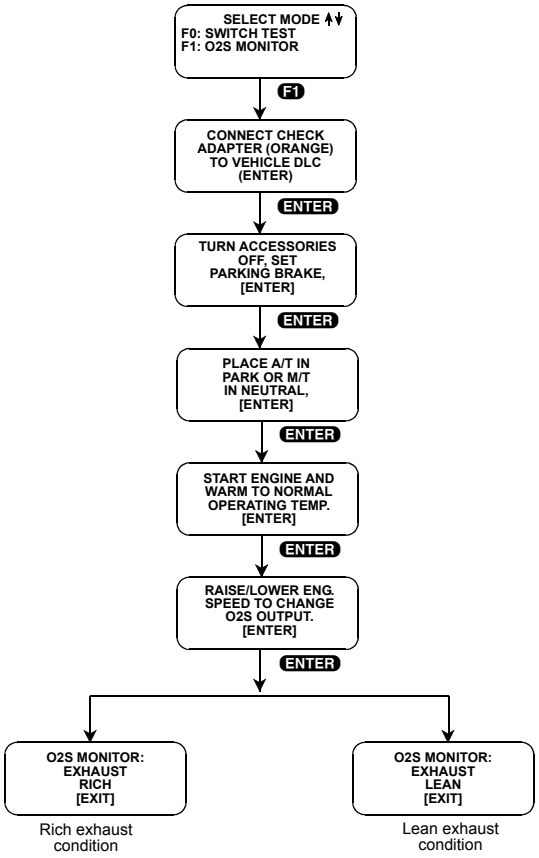
When performing the O2S Monitor test, make sure the vehicle you are testing is properly warmed up and is tested in a well-ventilated area.

To perform the O2S Monitor test, do the following:

1. Press F1 to select O2S Monitor from the OBD Controls menu.
2. The tester displays instructions for performing the O2S Monitor Test. Press ENTER when each step has been completed.
3. Follow the instructions on the tester display. When each instruction is completed, the tester indicates if further action is necessary. If a problem is detected, press EXIT to return to the OBD Controls menu.

4. Start the engine and warm to normal operating temperature.
5. The tester display informs you of the current O2S state. When the exhaust surrounding the O2S tip is lean, the tester will display EXHAUST LEAN. When the exhaust surrounding the O2S tip is rich, the tester will display EXHAUST RICH.
6. If the tester displays EXHAUST RICH or EXHAUST LEAN for a prolonged period of engine idling time, raise and hold the engine RPM above 2000 for 3 minutes. The tester display should begin to change rich or lean again.
7. When finished, press **EXIT** to return to the OBD Controls menu.

ACTIVE KEYS	
ENTER	Used when each step has been completed.
EXIT	Return to OBD Controls menu.



Note on O2S Monitor operation: On some early 1983-84 Mazda vehicles, it is necessary to disconnect the throttle position sensor before O2S monitor can begin. Consult factory service manual for additional information.

8. MAZDA DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Mazda vehicles are listed in the following charts.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD, OBD I SYSTEMS

YEAR: 1983	DTC NO.	DESCRIPTOR
1983	1	ENGINE SPEED (RPM SIGNAL)
	2	WATER THERMO SENSOR
	3	O2 SENSOR
	4	VACUUM SENSOR
	5	EGR POSITION SENSOR

YEAR: 1984	DTC NO.	DESCRIPTOR
1984	1	ENGINE SPEED (RPM SIGNAL)
	2	WATER THERMO SENSOR AIR FLOW METER
	3	O2 SENSOR WATER THERMO SENSOR
	4	VACUUM SENSOR O2 SENSOR
	5	EGR POSITION SENSOR THROTTLE SENSOR
	6	ATMOSPHERIC PRESSURE SENSOR

YEAR: 1985	DTC NO.	DESCRIPTOR
1985	1	ENGINE SPEED (RPM SIGNAL)
	2	WATER THERMO SENSOR AIR FLOW METER
	3	O2 SENSOR WATER THERMO SENSOR
	4	VACUUM SENSOR O2 SENSOR
	5	EGR POSITION SENSOR THROTTLE SENSOR
	6	ATMOSPHERIC PRESSURE SENSOR

YEAR: 1986	DTC NO.	DESCRIPTOR
1986	1	ENGINE SPEED (RPM SIGNAL) CRANK ANGLE SENSOR IGNITION PULSE
	2	WATER THERMO SENSOR AIR FLOW METER
	3	FEEDBACK SYSTEM WATER THERMO SENSOR
	4	VACUUM SENSOR INTAKE AIR TEMPERATURE SENSOR (AIR FLOW METER) TEMPERATURE SENSOR
	5	EGR POSITION SENSOR O2 SENSOR FEEDBACK SYSTEM
	6	THROTTLE SENSOR ATMOSPHERIC PRESSURE SENSOR
	7	BOOST SENSOR
	8	EGR POSITION SENSOR
	9	ATMOSPHERIC PRESSURE SENSOR
	12	COIL WITH IGNITER (TRAILING SIDE)
	15	INTAKE AIR TEMPERATURE SENSOR (DYNAMIC CHAMBER)
	22	NO.1 CYLINDER SENSOR

YEAR: 1987	DTC NO.	DESCRIPTOR
1987	1	IGNITION PULSE IGNITION PULSE CIRCUIT CRANK ANGLE SENSOR
	2	AIR FLOW METER
	3	WATER THERMO SENSOR
	4	TEMPERATURE SENSOR INTAKE AIR TEMPERATURE SENSOR
	5	FEEDBACK SYSTEM O2 SENSOR
	6	ATMOSPHERIC PRESSURE SENSOR THROTTLE SENSOR
	7	BOOST SENSOR PRESSURE SENSOR
	8	EGR POSITION SENSOR
	9	ATMOSPHERIC PRESSURE SENSOR WATER THERMO SENSOR OR CIRCUIT
	12	COIL WITH IGNITER (TRAILING SIDE)
	13	VACUUM SENSOR OR CIRCUIT
	14	ATMOSPHERIC PRESSURE SENSOR OR CIRCUIT
	15	O2 SENSOR OR CIRCUIT INTAKE AIR TEMPERATURE SENSOR (DYNAMIC CHAMBER) INTAKE AIR TEMPERATURE SENSOR (INTAKE AIR PIPE)
	16	EGR POSITION SENSOR OR CIRCUIT
	17	FEEDBACK SYSTEM
	18	A/F SOLENOID VALVE OR CIRCUIT
	22	NO. 1 CYLINDER SENSOR SLOW FUEL CUT SOLENOID VALVE OR CIRCUIT
	23	COASTING RICHER SOLENOID VALVE OR CIRCUIT
	26	PURGE SOLENOID VALVE OR CIRCUIT
	28	DUTY SOLENOID VACUUM VALVE OR CIRCUIT
	29	DUTY SOLENOID VENT VALVE OR CIRCUIT
	30	ACV SOLENOID VALVE OR CIRCUIT
	35	IDLE UP SOLENOID VALVE (FOR A/T) OR CIRCUIT
	45	VACUUM SOLENOID VALVE OR CIRCUIT

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	1	IGNITION COIL IGNITION PULSE CRANK ANGLE SENSOR IGNITION PULSE CIRCUIT
	2	NE SIGNAL DISTRIBUTOR (NE SIGNAL) AIR FLOW METER
	3	G1 SIGNAL DISTRIBUTOR (G1 SIGNAL) WATER THERMO SENSOR GROUP SENSOR (DISTRIBUTOR)
	4	G2 SIGNAL DISTRIBUTOR (G2 SIGNAL) INTAKE AIR TEMPERATURE SENSOR (AIR FLOW METER)
	5	KNOCK SENSOR OR KNOCK CONTROL UNIT O2 SENSOR
	6	THROTTLE SENSOR
	7	PRESSURE SENSOR BOOST SENSOR
	8	AIR FLOW METER
	9	WATER THERMO SENSOR ATMOSPHERIC PRESSURE SENSOR WATER THERMO SENSOR OR CIRCUIT
	10	INTAKE AIR THERMO SENSOR (AIR FLOW METER)
	11	INTAKE AIR THERMO SENSOR (DYNAMIC CHAMBER)
	12	THROTTLE SENSOR COIL WITH IGNITER (TRAILING SIDE) THROTTLE SENSOR (VARIABLE RESISTOR TYPE)
	13	VACUUM SENSOR OR CIRCUIT
	14	ATMOSPHERIC PRESSURE SENSOR VACUUM SENSOR OR CIRCUIT
	15	O2 SENSOR INTAKE AIR TEMPERATURE SENSOR (DYNAMIC CHAMBER) INTAKE AIR TEMPERATURE SENSOR (INTAKE AIR PIPE) O2 SENSOR OR CIRCUIT
	16	EGR POSITION SENSOR EGR POSITION SENSOR OR CIRCUIT
	17	FEEDBACK SYSTEM
	18	A/F SOLENOID VALVE OR CIRCUIT
	22	SLOW FUEL CUT SOLENOID VALVE OR CIRCUIT

YEAR: 1988 (CONTINUED)	DTC NO.	DESCRIPTOR
	23	COASTING RICHER SOLENOID VALVE OR CIRCUIT
	25	SOLENOID VALVE (PRESSURE REGULATOR CONTROL)
	26	SOLENOID VALVE (NO.1 PURGE CONTROL VALVE) SOLENOID VALVE (PURGE CONTROL) SOLENOID VALVE (NO.2 PURGE CONTROL VALVE) PURGE SOLENOID VALVE OR CIRCUIT
	27	SOLENOID VALVE (VACUUM SWITCH VALVE) SOLENOID VALVE (NO.1 PURGE CONTROL)
	28	SOLENOID VALVE (EGR) SOLENOID VALVE (EGR VACUUM) DUTY SOLENOID VACUUM VALVE OR CIRCUIT
	29	SOLENOID VALVE (EGR-VENT) DUTY SOLENOID VENT VALVE OR CIRCUIT
	30	ACV SOLENOID VALVE OR CIRCUIT
	34	BAC VALVE (IDLE SPEED CONTROL) SOLENOID VALVE (IDLE SPEED CONTROL) IDLE-UP SOLENOID VALVE (FOR A/C) OR CIRCUIT
	35	IDLE-UP SOLENOID VALVE (FOR A/T) OR CIRCUIT
	40	SOLENOID VALVE (TRIPLE INDUCTION CONTROL SYSTEM) OR O2 SENSOR RELAY
	41	SOLENOID VALVE (VARIABLE RESONANCE INDUCTION SYSTEM)
	42	SOLENOID VALVE (WASTE GATE)
	45	VACUUM SOLENOID VALVE OR CIRCUIT

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	1	IGNITION PULSE IGNITION PULSE (IGNITER, IGNITION COIL) IGNITION COIL (TRAILING SIDE) IGNITION PULSE CIRCUIT
	2	NE SIGNAL DISTRIBUTOR (NE SIGNAL) CRANK ANGLE SENSOR (NE SIGNAL)
	3	DISTRIBUTOR (G SIGNAL) G1 SIGNAL DISTRIBUTOR (G1 SIGNAL) G SIGNAL CRANK ANGLE SENSOR (G SIGNAL)
	4	G2 SIGNAL DISTRIBUTOR (G2 SIGNAL)

YEAR: 1989 (CONTINUED)	DTC NO.	DESCRIPTOR
	5	KNOCK SENSOR OR KNOCK CONTROL UNIT
	8	AIRFLOW METER AIRFLOW SENSOR AIRFLOW METER (AFM)
	9	WATER THERMOSENSOR WATER THERMOSENSOR OR CIRCUIT
	10	INTAKE AIR THERMOSENSOR (AIRFLOW METER) INTAKE AIR THERMOSENSOR (AFM)
	11	INTAKE AIR THERMOSENSOR (DYNAMIC CHAMBER) INTAKE AIR THERMOSENSOR (ENGINE)
	12	THROTTLE SENSOR THROTTLE SENSOR (FULL RANGE)
	13	PRESSURE SENSOR (INTAKE MANIFOLD PRESSURE) VACUUM SENSOR OR CIRCUIT
	14	ATMOSPHERIC PRESSURE SENSOR ATMOSPHERIC PRESSURE SENSOR (WITHIN ECU) ATMOSPHERIC PRESSURE SENSOR (ATP) ATMOSPHERIC PRESSURE OR CIRCUIT
	15	O2 SENSOR O2 SENSOR OR CIRCUIT
	16	EGR POSITION SENSOR EGR POSITION SENSOR OR CIRCUIT
	17	FEEDBACK SYSTEM
	18	THROTTLE SENSOR (NARROW RANGE) AIR/FUEL SOLENOID VALVE OR CIRCUIT
	20	METERING OIL PUMP POSITION SENSOR
	22	SLOW FUEL CUT SOL. VALVE OR CKT.
	23	COASTING RICHER SOL. VALVE OR CKT.
	25	SOLENOID VALVE (PRESSURE REGULATOR CONTROL)
	26	SOLENOID VALVE (NO. 1 PURGE CONTROL) SOLENOID VALVE (PURGE CONTROL) SOLENOID VALVE (NO. 2 PURGE CONTROL) STEP MOTOR (METERING OIL PUMP)
	27	SOLENOID VALVE (NO. 2 PURGE CONTROL) SOLENOID VALVE (NO. 1 CONTROL) METERING OIL PUMP (MOP)
	28	SOLENOID VALVE (EGR) SOLENOID VALVE (EGR-VACUUM)
	29	SOLENOID VALVE (EGR VENT)

YEAR: 1989 (CONTINUED)	DTC NO.	DESCRIPTOR
	30	SPLIT AIR SOLENOID VALVE ACV SOLENOID VALVE OR CIRCUIT
	31	SOLENOID VALVE (RELIEF)
	32	SOLENOID VALVE (SWITCH)
	33	PORT AIR SOLENOID VALVE
	34	SOLENOID VALVE (IDLE SPEED CONTROL) IDLE SPEED CONTROL VALVE (ISC VALVE) IDLE SPEED CONTROL VALVE (BAC VALVE) SOLENOID VALVE (BYPASS AIR CONTROL)
	35	IDLE UP SOLENOID VALVE OR CIRCUIT
	37	METERING OIL PUMP (MOP)
	38	SOLENOID VALVE (ACCELERATED WARM-UP SYSTEM) SOLENOID VALVE (ACCELERATED WARM- UP SYSTEM OR AIR SUPPLY VALVE (ASV))
	40	SOLENOID VALVE (TRIPLE INDUCTION CONTROL SYSTEM) OR O2 SENSOR RELAY AUXILIARY PORT VALVE
	41	SOLENOID VALVE (VARIABLE RESONANCE INDUCTION SYSTEM) SOLENOID VALVE (VARIABLE DYNAMIC EFFECT INTAKE CONTROL)
	42	SOLENOID VALVE (WASTE GATE) DUTY SOLENOID (TURBO BOOST PRESSURE CONTROL)
	45	VACUUM SOLENOID VALVE OR CIRCUIT
	51	FUEL PUMP RESISTOR RELAY
	71	INJECTOR (FRONT SECONDARY)
	73	INJECTOR (REAR SECONDARY)

YEAR: 1990	DTC NO.	DESCRIPTOR
1990	1	IGNITION PULSE IGNITION PULSE (IGNITER IGNITION COIL) IGNITION COIL (TRAILING SIDE) IGNITION PULSE CIRCUIT
	2	NE SIGNAL DISTRIBUTOR (NE SIGNAL) CRANK ANGLE SENSOR (NE SIGNAL)

YEAR: 1990 (CONTINUED)	DTC NO.	DESCRIPTOR
	3	G SIGNAL G1 SIGNAL DISTRIBUTOR (G1 SIGNAL) DISTRIBUTOR (G SIGNAL) CRANK ANGLE SENSOR (G SIGNAL)
	4	G2 SIGNAL DISTRIBUTOR (G2 SIGNAL)
	5	KNOCK SENSOR OR KNOCK CONTROL UNIT
	8	AIRFLOW METER AIRFLOW SENSOR
	9	WATER THERMOSENSOR WATER THERMOSENSOR OR CIRCUIT
	10	INTAKE AIR THERMOSENSOR INTAKE AIR THERMOSENSOR (AIRFLOW METER)
	11	INTAKE AIR THERMOSENSOR (DYNAMIC CHAMBER) INTAKE AIR THERMOSENSOR (ENGINE)
	12	THROTTLE SENSOR THROTTLE SENSOR (FULL RANGE)
	13	PRESSURE SENSOR (INTAKE MANIFOLD PRESSURE) VACUUM SENSOR OR CIRCUIT
	14	ATMOSPHERIC PRESSURE SENSOR (IN ECU) ATMOSPHERIC PRESSURE SENSOR ATMOSPHERIC PRESSURE SENSOR (ATP) ATMOSPHERIC PRESSURE SENSOR OR CIRCUIT
	15	O2 SENSOR LEFT SIDE O2 SENSOR O2 SENSOR OR CIRCUIT
	16	EGR POSITION SENSOR (CALIFORNIA ONLY) EGR POSITION SENSOR EGR POSITION SENSOR OR CIRCUIT
	17	FEEDBACK SYSTEM FEEDBACK SYSTEM (LEFT SIDE)
	18	THROTTLE SENSOR (NARROW RANGE) AIR/FUEL SOLENOID VALVE OR CIRCUIT
	20	METERING OIL PUMP POSITION SENSOR
	22	SLOW FUEL CUT SOLENOID VALVE OR CIRCUIT
	23	RIGHT SIDE O2 SENSOR COASTING RICHER SOLENOID VALVE OR CIRCUIT
	24	FEEDBACK SYSTEM (RIGHT SIDE)
	25	SOLENOID VALVE (PRESSURE REGULATOR) SOLENOID VALVE (PRESSURE REGULATOR CONTROL)

YEAR: 1990 (CONTINUED)	DTC NO.	DESCRIPTOR
	26	SOLENOID VALVE (PURGE CONTROL) STEP MOTOR (METERING OIL PUMP) PURGE SOLENOID VALVE OR CIRCUIT
	27	METERING OIL PUMP (MOP)
	28	SOLENOID VALVE (EGR) SOLENOID VALVE (EGR-VACUUM) DUTY SOLENOID VACUUM VALVE OR CIRCUIT
	29	SOLENOID VALVE (EGR-VENT) DUTY SOLENOID VENT VALVE OR CIRCUIT
	30	SPLIT AIR SOLENOID VALVE ACV SOLENOID VALVE OR CIRCUIT
	31	SOLENOID VALVE (RELIEF)
	32	SOLENOID VALVE (SWITCH)
	33	PORT AIR SOLENOID VALVE
	34	ISC VALVE IDLE SPEED CONTROL VALVE (BAC VALVE) SOLENOID VALVE (IDLE SPEED CONTROL) SOLENOID VALVE (BYPASS AIR CONTROL) IDLE-UP SOLENOID VALVE (FOR A/C) OR CIRCUIT
	35	IDLE-UP SOLENOID VALVE (FOR A/T) OR CIRCUIT
	36	O2 SENSOR HEATER RELAY
	37	METERING OIL PUMP (MOP)
	38	SOLENOID VALVE (ACCELERATED WARM- UP SYSTEM) SOLENOID VALVE (ACCELERATED WARM- UP SYSTEM OR AIR SUPPLY VALVE)
	40	SOLENOID VALVE (TRIPLE INDUCTION CONTROL SYSTEM) OR O2 SENSOR HEATER AUXILIARY PORT VALVE
	41	SOLENOID VALVE (VICS) SOLENOID VALVE (VARIABLE RESONANCE INDUCTION SYSTEM) SOLENOID VALVE (VARIABLE DYNAMIC EFFECT INTAKE CONTROL)
	42	SOLENOID VALVE (WASTE GATE) DUTY SOLENOID (TURBO BOOST PRESSURE CONTROL)
	45	VACUUM SOLENOID VALVE OR CIRCUIT
	51	FUEL PUMP RESISTOR RELAY
	71	INJECTOR (FRONT SECONDARY)
	73	INJECTOR (REAR SECONDARY)

YEAR: 1991	DTC NO.	DESCRIPTOR
NOTE: For 1991 Navajo DTCs, see table beginning on page 40.		
1991	1	IGNITION PULSE IGNITION PULSE (IGNITER, IGNITION COIL) IGNITION COIL (TRAILING SIDE) IG PULSE CIRCUIT
	2	NE SIGNAL DISTRIBUTOR (NE SIGNAL) CRANK ANGLE SENSOR (NE SIGNAL)
	3	G SIGNAL G1 SIGNAL DISTRIBUTOR (G1 SIGNAL) CRANK ANGLE SENSOR (G SIGNAL)
	4	G2 SIGNAL DISTRIBUTOR (G2 SIGNAL)
	5	KNOCK SENSOR OR KNOCK SENSOR CIRCUIT KNOCK SENSOR OR KNOCK SENSOR CONTROL UNIT KNOCK SENSOR
	8	AIRFLOW METER AIRFLOW SENSOR
	9	WATER THERMOSENSOR WATER THERMOSENSOR OR CIRCUIT
	10	INTAKE AIR THERMOSENSOR INTAKE AIR THERMOSENSOR (AIRFLOW METER)
	11	INTAKE AIR THERMOSENSOR (DYNAMIC CHAMBER) INTAKE AIR THERMOSENSOR (ENGINE)
	12	THROTTLE SENSOR THROTTLE SENSOR (FULL RANGE)
	13	PRESSURE SENSOR (INTAKE MANIFOLD PRESSURE) VACUUM SENSOR OR CIRCUIT
	14	ATMOSPHERIC PRESSURE SENSOR (IN ECU) ATMOSPHERIC PRESSURE SENSOR ATMOSPHERIC PRESSURE SENSOR (ATP) ATMOSPHERIC PRESSURE SENSOR OR CIRCUIT
	15	O2 SENSOR LEFT SIDE O2 SENSOR O2 SENSOR OR CIRCUIT
	16	EGR POSITION SENSOR EGR POSITION SENSOR OR CIRCUIT
	17	FEEDBACK SYSTEM FEEDBACK SYSTEM (LEFT SIDE)

YEAR: 1991 (CONTINUED)	DTC NO.	DESCRIPTOR
	18	THROTTLE SENSOR (NARROW RANGE) AIR/FUEL SOLENOID VALVE OR CIRCUIT
	20	METERING OIL PUMP POSITION SENSOR
	22	SLOW FUEL CUT SOLENOID VALVE OR CIRCUIT
	23	RIGHT SIDE O2 SENSOR COASTING RICHER SOLENOID VALVE OR CIRCUIT
	24	FEEDBACK SYSTEM (RIGHT SIDE)
	25	SOLENOID VALVE (PRESSURE REGULATOR) SOLENOID VALVE (PRESSURE REGULATOR CONTROL)
	26	SOLENOID VALVE (PURGE CONTROL) STEP MOTOR (METERING OIL PUMP) PURGE SOLENOID VALVE OR CIRCUIT
	27	METERING OIL PUMP (MOP)
	28	SOLENOID VALVE (EGR) SOLENOID VALVE (EGR VACUUM) DUTY SOLENOID VACUUM VALVE OR CIRCUIT
	29	SOLENOID VALVE (EGR VENT) DUTY SOLENOID VENT VALVE OR CIRCUIT
	30	SPLIT AIR SOLENOID VALVE ACV SOLENOID VALVE OR CIRCUIT
	31	SOLENOID VALVE (RELIEF)
	32	SOLENOID VALVE (SWITCH)
	33	PORT AIR SOLENOID VALVE
	34	ISC VALVE SOLENOID VALVE (BYPASS AIR CONTROL) IDLE-UP SOLENOID VALVE (FOR A/C) OR CIRCUIT SOLENOID VALVE (IDLE SPEED CONTROL) IDLE SPEED CONTROL VALVE (BAC VALVE)
	35	IDLE-UP SOLENOID VALVE (FOR A/T) OR CIRCUIT
	37	METERING OIL PUMP (MOP)
	38	SOLENOID VALVE (ACCELERATED WARM- UP SYSTEM) SOLENOID VALVE (ACCELERATED WARM- UP SYSTEM) OR AIR SUPPLY VALVE
	40	SOLENOID VALVE (TRIPLE INDUCTION CON- TROL SYSTEM) OR O2 SENSOR HEATER O2 SENSOR HEATER RELAY AUXILIARY PORT VALVE
	41	SOLENOID VALVE (VICS) SOLENOID VALVE (VARIABLE RESONANCE INDUCTION SYSTEM) SOLENOID VALVE (VARIABLE DYNAMIC EFFECT INTAKE CONTROL)

YEAR: 1991 (CONTINUED)	DTC NO.	DESCRIPTOR
	42	SOLENOID VALVE (WASTE GATE) DUTY SOLENOID (TURBO BOOST PRES SURE CONTROL)
	45	VACUUM SOLENOID VALVE OR CIRCUIT
	51	FUEL PUMP RESISTOR RELAY
	71	INJECTOR (FRONT SECONDARY)
	73	INJECTOR (REAR SECONDARY)

Mazda DTCs (1991 Navajo)

YEAR: 1991	DTC NO.	DESCRIPTOR
1991 Navajo	11	SYSTEM PASS
	12	CANNOT CONTROL RPM DURING SELF TEST HIGH RPM CHECK (ENGINE RUNNING)
	13	CANNOT CONTROL RPM DURING SELF TEST LOW RPM CHECK (ENGINE RUNNING)
	14	PIP CIRCUIT FAILURE (CONTINUOUS MEMORY)
	15	ECA READ ONLY MEMORY (ROM) TEST FAILED (KOEO)
	15	ECA KEEP ALIVE MEMORY (KAM) TEST FAILED (CONTINUOUS MEMORY)
	16	IGNITION DIAGNOSTIC MONITOR (IDM) SIGNAL NOT RECEIVED (KOEO)
	18	SAW CIRCUIT FAILURE (ENGINE RUNNING)
	18	LOSS OF IDM INPUT TO PROCESSOR/IDM CIRCUIT FAILURE (CONTINUOUS MEMORY)
	19	FAILURE IN ECA INTERNAL VOLTAGE (KOEO)
	21	ECT OUT OF SELF TEST RANGE (KOEO/ENGINE RUNNING)
	22	BP OUT OF SELF TEST RANGE (KOEO, ENGINE RUNNING, CONTINUOUS MEMORY)
	23	TP OUT OF SELF TEST RANGE (KOEO, ENGINE RUNNING)
	24	AIR CHARGE TEMP (ACT) OUT OF SELF TEST RANGE (KOEO, ENGINE RUNNING)
	26	MAF OUT OF SELF TEST RANGE (KOEO, ENGINE RUNNING)
	29	INSUFFICIENT INPUT FROM THE VEHICLE SPEED SENSOR (CONTINUOUS MEMORY)
	41	HEGO SENSOR CIRCUIT INDICATES SYSTEM LEAN (ENGINE RUNNING)
	41	NO HEGO SWITCH DETECTED (CONTINUOUS MEMORY)
	42	HEGO SENSOR CIRCUIT INDICATES SYSTEM RICH (ENGINE RUNNING)
	45	COIL 1, 2, OR 3 FAILURE (CONTINUOUS MEMORY)
	51	ECT INDICATED -40°F/ CIRCUIT OPEN (KOEO, CONTINUOUS MEMORY)
	53	TP CIRCUIT ABOVE MAXIMUM VOLTAGE (KOEO, CONTINUOUS MEMORY)
	54	ACT INDICATED -40°F/ CIRCUIT OPEN (KOEO, CONTINUOUS MEMORY)

YEAR: 1991 (CONTINUED)	DTC NO.	DESCRIPTOR
	56	MAF CIRCUIT ABOVE MAXIMUM VOLTAGE (KOEO, CONTINUOUS MEMORY)
	61	ECT INDICATED 254°F/ CIRCUIT GROUNDED (KOEO, CONTINUOUS MEMORY)
	63	TP CIRCUIT BELOW MINIMUM VOLTAGE (KOEO, CONTINUOUS MEMORY)
	64	ACT INDICATED 254°F/ CIRCUIT GROUNDED (KOEO, CONTINUOUS MEMORY)
	66	MAF CIRCUIT BELOW MINIMUM VOLTAGE (CONTINUOUS MEMORY)
	67	NEUTRAL DRIVE SWITCH (NDS) CIRCUIT OPEN, A/C ON (KOEO)
	67	CLUTCH SWITCH CIRCUIT FAILURE (CONTINUOUS MEMORY)
	72	INSUFFICIENT MAF CHANGE DURING DYNAMIC RESPONSE TEST (ENGINE RUNNING)
	73	INSUFFICIENT TP CHANGE DURING DYNAMIC RESPONSE TEST (ENGINE RUNNING)
	74	BRAKE ON/OFF (BOO) CIRCUIT FAILURE, NOT ACTUATED (ENGINE RUNNING)
	77	OPERATOR ERROR, DYNAMIC RESPONSE/CYLINDER BALANCE TESTS (ENGINE RUNNING)
	79	A/C ON, DEFROST ON DURING SELF TEST
	86	SHIFT SOLENOID CIRCUIT FAILURE (KOEO)
	87	PRIMARY FUEL PUMP CIRCUIT FAILURE (KOEO, CONTINUOUS MEMORY)
	89	CLUTCH CONVERTER OVERRIDE CIRCUIT FAILURE (KOEO)
	95	FUEL PUMP CIRCUIT OPEN, ECA TO MOTOR GROUND (KOEO, CONTINUOUS MEMORY)
	96	FUEL PUMP CIRCUIT OPEN, BATTERY TO ECA (KOEO, CONTINUOUS MEMORY)
	98	HARD FAULT PRESENT (ENGINE RUNNING)

YEAR: 1992	DTC NO.	DESCRIPTOR
NOTE: For 1992 Navajo DTCs, see table beginning on page 50.		
1992	1	IGNITION PULSE IGNITION PULSE (IGNITER, IGNITION COIL) IG PULSE CIRCUIT
	2	NE SIGNAL NE2 SIGNAL NE2 SIGNAL CRANK ANGLE SENSOR 2 DISTRIBUTOR (NE SIGNAL)
	3	G SIGNAL G1 SIGNAL G SIGNAL CRANK ANGLE SENSOR 1 DISTRIBUTOR (NE SIGNAL)
	4	G2 SIGNAL NE1 SIGNAL NE1 SIGNAL CRANK ANGLE SENSOR DISTRIBUTOR (G2 SIGNAL)
	5	KNOCK SENSOR OR KNOCK SENSOR CONTROL UNIT KNOCK SENSOR LEFT SIDE KNOCK SENSOR
	6	VEHICLE SPEED SENSOR SPEED SIGNAL
	7	RIGHT SIDE KNOCK SENSOR
	8	AIRFLOW METER AIRFLOW SENSOR
	9	WATER THERMOSENSOR WATER THERMOSENSOR OR CIRCUIT
	10	INTAKE AIR THERMOSENSOR INTAKE AIR THERMOSENSOR (AIRFLOW METER)
	11	INTAKE AIR THERMOSENSOR (DYNAMIC CHAMBER)
	12	THROTTLE SENSOR
	13	VACUUM SENSOR OR CIRCUIT
	14	ATMOSPHERIC PRESSURE SENSOR (IN ECU) ATMOSPHERIC PRESSURE SENSOR ATMOSPHERIC PRESSURE SENSOR OR CIRCUIT
	15	O2 SENSOR (INACTIVATION) O2 SENSOR LEFT SIDE O2 SENSOR O2 SENSOR OR CIRCUIT
	16	EGR POSITION SENSOR (CALIFORNIA ONLY) EGR POSITION SENSOR EGR POSITION SENSOR OR CIRCUIT

YEAR: 1992 (CONTINUED)	DTC NO.	DESCRIPTOR
	17	O2 SENSOR (INVERSION) FEEDBACK SYSTEM LEFT SIDE FEEDBACK SYSTEM FEEDBACK SYSTEM (INVERSION)
	18	AIR/FUEL SOLENOID VALVE OR CIRCUIT
	22	SLOW FUEL CUT SOLENOID VALVE OR CIRCUIT
	23	RIGHT SIDE O2 SENSOR COASTING RICHER SOLENOID VALVE OR CIRCUIT
	24	RIGHT SIDE FEEDBACK SYSTEM
	25	SOLENOID VALVE (PRESSURE REGULATOR) SOLENOID VALVE (PRESSURE REGULATOR CONTROL)
	26	SOLENOID VALVE (PURGE CONTROL) PURGE SOLENOID VALVE OR CIRCUIT
	28	SOLENOID VALVE (EGR) SOLENOID VALVE (EGR VACUUM) DUTY SOLENOID VACUUM VALVE OR CIRCUIT
	29	SOLENOID VALVE (EGR VENT) DUTY SOLENOID VENT VALVE OR CIRCUIT
	30	RELAY (COLD START INJECTOR) ACV SOLENOID VALVE OR CIRCUIT
	34	ISC VALVE IDLE SPEED CONTROL VALVE (BAC VALVE) IDLE-UP SOLENOID VALVE (FOR A/C) OR CIRCUIT SOLENOID VALVE (IDLE SPEED CONTROL)
	35	IDLE-UP SOLENOID VALVE (FOR A/T) OR CIRCUIT
	36	RIGHT SIDE O2 SENSOR HEATER O2 SENSOR HEATER
	37	LEFT SIDE O2 SENSOR HEATER
	41	SOLENOID VALVE (VICS) SOLENOID VALVE (VRIS 1)
	42	SOLENOID VALVE (WASTE GATE)
	45	VACUUM SOLENOID VALVE OR CIRCUIT
	46	SOLENOID VALVE (VRIS 2)
	55	PULSE GENERATOR
	60	1-2 SHIFT SOLENOID VALVE
	61	2-3 SHIFT SOLENOID VALVE
	62	3-4 SHIFT SOLENOID VALVE
	63	LOCKUP SOLENOID VALVE

YEAR: 1992 (CONTINUED)	DTC NO.	DESCRIPTOR
	65	A/C SIGNAL (EC-AT CU)
	67	ELECTRICAL COOLING FAN RELAY NO2
	69	WATER THERMOSENSOR (FAN)

YEAR: 1993	DTC NO.	DESCRIPTOR
NOTE: For 1993 Navajo DTCs, see table beginning on page 50.		
1993	1	IGNITION PULSE (IGNITER, IGNITION COIL) IGNITION PULSE IG PULSE CIRCUIT
	2	NE SIGNAL NE SIGNAL (CRANKSHAFT POSITION SENSOR) NE2 SIGNAL, CRANKSHAFT POSITION SENSOR 2 NE2 SIGNAL DISTRIBUTOR (NE SIGNAL) NE2 SIGNAL CRANK ANGLE SENSOR 2 CRANK ANGLE SENSOR (NE SIGNAL)
	3	G SIGNAL (DOHC AND CALIFORNIA B6) G SIGNAL (CRANKSHAFT POSITION SENSOR) G SIGNAL, CRANKSHAFT POSITION SENSOR 1 G SIGNAL DISTRIBUTOR (G1 SIGNAL) G SIGNAL CRANK ANGLE SENSOR 1 CRANK ANGLE SENSOR (G SIGNAL)
	4	NE1 SIGNAL, CRANKSHAFT POSITION SENSOR NE1 SIGNAL DISTRIBUTOR (G2 SIGNAL) NE1 SIGNAL CRANK ANGLE SENSOR
	5	KNOCK SENSOR LEFT SIDE KNOCK SENSOR
	6	VEHICLE SPEED SENSOR SPEED SIGNAL SPEEDOMETER SENSOR
	7	RIGHT SIDE KNOCK SENSOR
	8	AIRFLOW METER AIRFLOW SENSOR
	9	WATER THERMOSENSOR ENGINE COOLANT TEMPERATURE SENSOR (CIS) ENGINE COOLANT TEMPERATURE SENSOR ENGINE COOLANT TEMPERATURE SENSOR OR CIRCUIT

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	10	INTAKE AIR THERMOSENSOR INTAKE AIR TEMPERATURE SENSOR (IN AIR FLOW SENSOR) INTAKE AIR THERMOSENSOR (AIRFLOW METER)
	11	INTAKE AIR TEMPERATURE SENSOR INTAKE AIR TEMPERATURE SENSOR (ON DYNAMIC CHAMBER) INTAKE AIR THERMOSENSOR
	12	THROTTLE SENSOR THROTTLE POSITION SENSOR THROTTLE SENSOR (FULL RANGE)
	13	PRESSURE SENSOR VACUUM SENSOR OR CIRCUIT
	14	ATMOSPHERIC PRESSURE SENSOR (IN ECU) BAROMETRIC ABSOLUTE PRESSURE SENSOR BAROMETRIC ABSOLUTE PRESSURE SENSOR (IN PCME) ATMOSPHERIC PRESSURE SENSOR BAROMETRIC ABSOLUTE PRESSURE SENSOR OR CIRCUIT
	15	O2 SENSOR (INACTIVATION) HEATED O2 SENSOR HEATED O2 SENSOR (LH) O2 SENSOR O2 SENSOR (LEFT SIDE) O2 SENSOR OR CIRCUIT
	16	EGR FUNCTION SENSOR (CALIFORNIA) EGR FUNCTION SENSOR EGR POSITION SENSOR EGR SWITCH (CALIFORNIA ONLY) EGR POSITION SENSOR OR CIRCUIT
	17	O2 SENSOR (INVERSION) CLOSED LOOP SYSTEM CLOSED LOOP SYSTEM (LH) FEEDBACK SYSTEM FEEDBACK SYSTEM (INVERSION) FEEDBACK SYSTEM (LEFT SIDE)
	18	THROTTLE SENSOR (NARROW RANGE) MIXTURE CONTROL SOLENOID OR CIRCUIT
	20	METERING OIL PUMP POSITION SENSOR
	22	SLOW FUEL CUT SOLENOID VALVE OR CIRCUIT
	23	HEATED O2 SENSOR (RH) O2 SENSOR (RIGHT SIDE) FUEL THERMOSENSOR COASTING RICHER SOLENOID VALVE OR CIRCUIT
	24	CLOSED LOOP SYSTEM (RH) FEEDBACK SYSTEM (RIGHT SIDE)
	25	SOLENOID VALVE (PRESSURE REGULATOR) SOLENOID VALVE (PRESSURE REGULATOR CONTROL)

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	26	SOLENOID VALVE (PURGE CONTROL) METERING OIL PUMP (STEPPING MOTOR) PURGE SOLENOID VALVE OR CIRCUIT
	27	METERING OIL PUMP
	28	SOLENOID VALVE (EGR CONTROL) SOLENOID VALVE (EGR VACUUM) SOLENOID VALVE (EGR) DUTY SOLENOID VACUUM VALVE OR CIRCUIT
	29	SOLENOID VALVE (EGR VENT) DUTY SOLENOID VENT VALVE OR CIRCUIT
	30	RELAY (COLD START INJECTOR) SOLENOID VALVE (SPLIT AIR BYPASS) ACV SOLENOID VALVE OR CIRCUIT
	31	SOLENOID VALVE (RELIEF 1)
	32	SOLENOID VALVE (SWITCHING)
	33	SOLENOID VALVE (PORT AIR BYPASS)
	34	ISC VALVE IDLE AIR CONTROL VALVE IDLE SPEED CONTROL VALVE (BAC VALVE) IDLE-UP SOLENOID VALVE (FOR A/C) OR CIRCUIT
	35	IDLE-UP SOLENOID VALVE (FOR A/T) OR CIRCUIT
	36	RIGHT SIDE O2 SENSOR HEATER O2 SENSOR HEATER
	37	LEFT SIDE O2 SENSOR HEATER METERING OIL PUMP
	38	SOLENOID VALVE (ACCELERATED WARM- UP SYSTEM)
	39	SOLENOID VALVE (RELIEF 2)
	40	SOLENOID VALVE (PURGE CONTROL)
	41	SOLENOID VALVE (VICS) SOLENOID VALVE (VRIS 1) SOLENOID VALVE (VRIS)
	42	SOLENOID VALVE (TURBO PRECONTROL)
	43	SOLENOID VALVE (WASTEGATE CONTROL)
	44	SOLENOID VALVE (TURBO CONTROL)
	45	SOLENOID VALVE (CHARGE CONTROL) VACUUM SOLENOID VALVE OR CIRCUIT
	46	SOLENOID VALVE (VRIS 2) SOLENOID VALVE (CHARGE RELIEF)
	50	SOLENOID VALVE (DOUBLE THROTTLE CONTROL)

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	51	FUEL PUMP RELAY
	52	AIR PUMP RELAY
	55	VEHICLE SPEED PULSE GENERATOR VEHICLE SPEED PULSE GENERATOR (ATX)
	56	ATF THERMOSENSOR (ATX)
	60	1-2 SHIFT SOLENOID VALVE
	61	2-3 SHIFT SOLENOID VALVE
	62	3-4 SHIFT SOLENOID VALVE
	63	LOCKUP SOLENOID VALVE
	64	SOLENOID VALVE (3-2 TIMING)
	65	SOLENOID VALVE (LOCKUP) A/C SIGNAL (PCMT)
	66	SOLENOID VALVE (LINE PRESSURE)
	67	COOLANT FAN RELAY (NO1)
	68	COOLANT FAN RELAY (NO2, NO3)
	69	ENGINE COOLANT TEMPERATURE SENSOR (FAN) WATER THERMOSENSOR (FAN)
	71	INJECTOR (FRONT SECONDARY)
	73	INJECTOR (REAR SECONDARY)
	76	SLIP LOCK UP OFF SIGNAL (EC-AT CU)
	77	TORQUE REDUCED SIGNAL (EC-AT CU)

YEAR: 1994	DTC NO.	DESCRIPTOR
NOTE: For 1994 B Series, Navajo, and 626/MX6 w/EEC-IV and ATX, see table beginning on page 50.		
1994	1	IGF SIGNAL IGNITION PULSE (IGNITER IGNITION COIL)
	2	NE SIGNAL NE2 SIGNAL CRANKSHAFT POSITION SENSOR NO2 NE2 SIGNAL
	3	G SIGNAL G SIGNAL CRANKSHAFT POSITION SENSOR NO1 G1 SIGNAL SGC SIGNAL SGC SIGNAL CRANKSHAFT POSITION SENSOR 1 SGT SIGNAL

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	4	NE1 SIGNAL CRANKSHAFT POSITION SENSOR NO1 SGC SIGNAL SGT SIGNAL SGT SIGNAL CRANKSHAFT POSITION SENSOR G2 SIGNAL
	5	KNOCK SENSOR LEFT SIDE KNOCK SENSOR
	6	VEHICLE SPEED SENSOR
	7	RIGHT SIDE KNOCK SENSOR
	8	VOLUME AIRFLOW SENSOR MASS AIRFLOW SENSOR
	9	ENGINE COOLANT TEMPERATURE SENSOR
	10	INTAKE AIR TEMPERATURE SENSOR
	11	INTAKE AIR TEMPERATURE SENSOR
	12	THROTTLE POSITION SENSOR FUEL PUMP RELAY
	13	MANIFOLD ABSOLUTE PRESSURE SENSOR
	14	BAROMETRIC ABSOLUTE PRESSURE SENSOR (IN PCME) BAROMETRIC ABSOLUTE PRESSURE SENSOR
	15	O2 SENSOR (INACTIVATION) HEATED O2 SENSOR (INACTIVATION) LEFT SIDE HEATED O2 SENSOR (INACTIVATION) HEATED O2 SENSOR (LEFT SIDE)
	16	EGR FUNCTION SENSOR
	17	O2 SENSOR (INVERSION) HEATED O2 SENSOR (INVERSION) LEFT SIDE HEATED O2 SENSOR (INVERSION) CLOSED LOOP SYSTEM (LEFT SIDE)
	18	THROTTLE POSITION SENSOR (NARROW RANGE)
	20	METERING OIL PUMP POSITION SENSOR
	23	HEATED O2 SENSOR (RH)
	23	RIGHT SIDE HEATED O2 SENSOR (INACTIVATION) FUEL THERMOSENSOR
	24	CLOSED LOOP SYSTEM (RH) RIGHT SIDE HEATED O2 SENSOR (INVERSION)
	25	SOLENOID VALVE (PRESSURE REGULATOR) PRC SOLENOID VALVE
	26	SOLENOID VALVE (PURGE CONTROL) METERING OIL PUMP (STEPPING MOTOR)

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	27	METERING OIL PUMP
	28	EGR SOLENOID VALVE EGR SOLENOID VACUUM
	29	EGR SOLENOID VALVE (VENT)
	30	COLD START INJECTOR RELAY SOLENOID VALVE (SPLIT AIR BYPASS)
	31	SECONDARY AIR BYPASS VALVE
	32	SECONDARY AIR SWITCHING VALVE
	33	SOLENOID VALVE (PORT AIR BYPASS)
	34	IAC VALVE
	35	PRC SOLENOID VALVE NO2
	36	RIGHT SIDE HEATED O2 SENSOR HEATER HEATED O2 SENSOR HEATER
	37	LEFT SIDE HEATED O2 SENSOR HEATER METERING OIL PUMP
	38	SOLENOID VALVE (ACCELERATED WARM- UP SYSTEM)
	39	SOLENOID VALVE (RELIEF 2)
	40	SOLENOID VALVE (PURGE CONTROL)
	41	SOLENOID VALVE (VICS) VRIS SOLENOID VALVE NO1 VRIS SOLENOID VALVE
	42	SOLENOID VALVE (TURBO PRECONTROL)
	43	SOLENOID VALVE (WASTEGATE CONTROL)
	44	SOLENOID VALVE (TURBO CONTROL)
	45	SOLENOID VALVE (CHARGE CONTROL)
	46	VRIS SOLENOID VALVE NO2 SOLENOID VALVE (CHARGE RELIEF)
	50	SOLENOID VALVE (DOUBLE THROTTLE CONTROL)
	51	FUEL PUMP RELAY (SPEED)
	54	AIR PUMP RELAY
	55	VEHICLE SPEED PULSE GENERATOR
	60	1-2 SHIFT SOLENOID VALVE
	61	2-3 SHIFT SOLENOID VALVE
	62	3-4 SHIFT SOLENOID VALVE
	63	LOCKUP SOLENOID VALVE

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	65	A/C SIGNAL (PCMT)
	67	COOLANT FAN RELAY
	67	COOLANT FAN RELAY NO1
	71	INJECTOR (FRONT SECONDARY)
	73	INJECTOR (REAR SECONDARY)
	76	SLIP LOCK UP OFF SIGNAL (PCMT)
	77	TORQUE REDUCED SIGNAL (PCMT)

Mazda DTCs (1992-1994 Navajo, 1994 B Series, 1994 626/MX6 W/EEC-IV and ATX)

YEAR: 1992-1994	DTC NO.	DESCRIPTOR
1992-1994 Navajo,	111	SYSTEM PASS
1994 B Series,	112	IAT SENSOR OUTPUT BELOW 0.2v/INDICATED 254°F
1994 626/MX6	113	IAT SENSOR OUTPUT ABOVE 4.6v/INDICATED -40°F
w/EEC-IV and ATX	114	IDLE AIR TEMP. OUT OF EXPECTED RANGE
	116	ECT OUT OF EXPECTED RANGE
	117	ECT SENSOR OUTPUT BELOW 0.2v/INDICATED 254°F
	118	ECT SENSOR OUTPUT ABOVE 4.6v/INDICATED -40°F
	121	TP OUT OF EXPECTED RANGE (INCONSISTENT WITH MAF)
	122	TPS OUTPUT BELOW 0.5v
	123	TPS OUTPUT ABOVE 4.6v
	124	TP SENSOR VOLTAGE HIGHER THAN EXPECTED
	125	TP SENSOR VOLTAGE LOWER THAN EXPECTED
	129	INSUFFICIENT MAF/MAP CHANGE DURING DYNAMIC RESPONSE TEST
	136	LEFT BANK HO2 SENSOR OUTPUT CONTINUES LEAN CONDITION
	137	LEFT BANK HO2 SENSOR OUTPUT CONTINUES RICH CONDITION
	139	LEFT BANK HO2 SENSOR CIRCUIT, OPEN/SHORT
	144	RIGHT BANK HO2 SENSOR CIRCUIT, OPEN/SHORT
	157	MAF CIRCUIT BELOW 0.4v
	158	MAF CIRCUIT ABOVE 4.5v
	159	MAF OUT OF EXPECTED RANGE

YEAR: 1992-1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	167	INSUFFICIENT TP CHANGE DURING DYNAMIC RESPONSE TEST
	171	RIGHT BANK ADAPTIVE FUEL CONTROL EXCEEDS LIMITS (HEGO UNABLE TO SWITCH)
	172	RIGHT BANK HO2 SENSOR OUTPUT CONTINUES LEAN CONDITION
	173	RIGHT BANK HO2 SENSOR OUTPUT CONTINUES RICH CONDITION
	175	LEFT BANK HO2 SENSOR OUTPUT CONTINUES LEAN CONDITION
	176	LEFT BANK HO2 SENSOR OUTPUT CONTINUES RICH CONDITION
	177	LEFT BANK HO2 SENSOR OUTPUT CONTINUES RICH CONDITION
	179	RIGHT BANK FUEL SYSTEM AT LEAN ADAPTIVE LIMIT AT PART THROTTLE/SYSTEM RICH
	181	RIGHT BANK FUEL SYSTEM AT RICH ADAPTIVE LIMIT AT PART THROTTLE/SYSTEM LEAN
	182	RIGHT BANK FUEL SYSTEM AT LEAN ADAPTIVE LIMIT AT IDLE/ SYSTEM RICH
	183	RIGHT BANK FUEL SYSTEM AT RICH ADAPTIVE LIMIT AT IDLE/ SYSTEM LEAN
	184	MAF HIGHER THAN EXPECTED
	185	MAF LOWER THAN EXPECTED
	186	INJECTOR PULSE WIDTH HIGHER THAN EXPECTED
	187	INJECTOR PULSE WIDTH LOWER THAN EXPECTED
	188	LEFT BANK FUEL SYSTEM AT LEAN ADAPTIVE LIMIT AT PART THROTTLE/SYSTEM RICH
	189	LEFT BANK FUEL SYSTEM AT RICH ADAPTIVE LIMIT AT PART THROTTLE/SYSTEM LEAN
	191	LEFT BANK FUEL SYSTEM AT LEAN ADAPTIVE LIMIT AT IDLE/ SYSTEM RICH
	192	LEFT FUEL SYSTEM AT RICH ADAPTIVE LIMIT AT IDLE/SYSTEM LEAN
	211	NO CAMSHAFT POSITION SIGNAL (PIP CIRCUIT FAILURE)
	212	IGNITION DIAGNOSTIC MONITOR (IN IGNITION CONTROL MODULE) NO SIGNAL
	213	SPARK OUTPUT OPEN (SAW/SPOUT CIRCUIT)
	214	CAMSHAFT POSITION SIGNAL OPEN/SHORT
	215	COIL 1 PRIMARY CIRCUIT OPEN/SHORT
	216	COIL 2 PRIMARY CIRCUIT OPEN/SHORT
	217	COIL 3 PRIMARY CIRCUIT OPEN/SHORT

YEAR: 1992-1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	218	IGNITION DEAGNOSTIC MONITOR (LEFT) IN IGNITION CONTROL MODULE, NO SIGNAL
	219	SPARK OUTPUT OPEN (SAW/SPOUT CIRCUIT)
	222	INGITION DIAGNOSTIC MONITOR (RIGHT) IN IGNITION CONTROL MODULE, NO SIGNAL
	223	NO DUAL PLUG OPERATION
	224	COIL 1, 2, 3, OR 4 PRIMARY CIRCUIT OPEN
	226	NO IGNITION DIAGNOSTIC MONITOR (IN IGNITION CONTROL MODULE), NO SIGNAL
	232	COIL 1, 2, OR 3 PRIMARY CIRCUIT FAILURE
	241	OCTANE ADJUST CIRCUIT OPEN
	244	CYLINDER IDENTIFICATION DISPLAY CIRCUIT
	326	DIFFERENTIAL PRESSURE FEEDBACK EGR SENSOR OUTPUT LESS THAN EXPECTED
	327	DIFFERENTIAL PRESSURE FEEDBACK EGR SENSOR OUTPUT BELOW .02v
	332	DIFFERENTIAL PRESSURE FEEDBACK EGR SENSOR, LOW FLOW
	335	DIFFERENTIAL PRESSURE FEEDBACK EGR SENSOR OUT OF RANGE DURING KOEO
	336	DIFFERENTIAL PRESSURE FEEDBACK EGR SENSOR, HIGH OUTPUT
	337	DIFFERENTIAL PRESSURE FEEDBACK EGR SENSOR ABOVE 4.8v
	341	OCTANE ADJUST CIRCUIT OPEN
	411	IAC SOLENOID FAILED LOW RPM TEST DURING KOER
	412	IAC SOLENOID FAILED HIGH RPM TEST DURING KOER
	415	ADAPTIVE IAC AT MINIMUM LIMIT
	416	ADAPTIVE IAC AT MAXIMUM LIMIT
	452	NO VEHICLE SPEED SENSOR SIGNAL
	511	PCM (ECA) READ ONLY MEMORY (ROM) TEST FAILED DURING KOEO
	512	POWER TO PCM (ECA) KEEP ALIVE MEMORY (KAM) TEST FAILED
	513	FAILURE IN PCM (ECA) INTERNAL VOLTAGE
	519	STEERING PRESSURE SENSOR CIRCUIT IS CLOSED
	519	POWER STEERING PRESSURE SWITCH OPEN DURING KOEO
	521	POWER STEERING PRESSURE SWITCH OPEN DURING KOER
	522	VEHICLE NOT IN PARK OR NEUTRAL DURING KOEO

YEAR: 1992-1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	525	A/C SWITCH ON DURING KOEO
	528	CLUTCH SWITCH OR PARK/NEUTRAL POSITION OPEN/SHORT
	528	CLUTCH PEDAL SWITCH/PARK NEUTRAL SWITCH OPEN/SHORT (M/T)
	536	STOPLIGHT SWITCH OPEN/SHORT OR NOT ACTUATED DURING SELF TEST
	538	DYNAMIC RESPONSE TEST, INCORRECT RPM CHANGE (OPERATOR ERROR)
	538	INVALID CYLINDER BALANCE TEST DUE TO THROTTLE MOVEMENT
	539	A/C SWITCH ON DURING KOEO OR KOER
	542	FUEL PUMP OPEN/SHORT
	543	FUEL PUMP CIRCUIT OPEN
	554	PRESSURE REGULATOR CONTROL CIRCUIT FAILURE
	556	FUEL PUMP OPEN/SHORT
	558	EGR VACUUM REGULATOR SOLENOID OPEN/SHORT
	559	A/C RELAY CIRCUIT FAULT
	563	HIGH FAN CONTROL CIRCUIT FAILURE
	565	CANISTER PURGE SOLENOID VALVE OPEN/SHORT
	566	3-4 SHIFT SOLENOID VALVE (A/T ONLY) OPEN/SHORT
	571	EGR SOLENOID VALVE (VENT) OUTPUT CIRCUIT
	572	EGR SOLENOID VALVE (VACUUM) OUTPUT CIRCUIT
	629	TORQUE CONVERTER CLUTCH SOLENOID OPEN/SHORT
	998	PCM IS IN FAIL SAFE MODE, HARD FAULT PRESENT

YEAR: 1995	DTC NO.	DESCRIPTOR
1995	1	IGF SIGNAL NOT PRESENT
	2	CRANKSHAFT SENSOR, NO NE SIGNAL (V6 626/MX6, V6 MX3, RX7) NE SIGNAL NOT PRESENT (929, 2WD MPV) CAMSHAFT SENSOR, NO SGT SIGNAL (2.0L 626/MX6) SGT SIGNAL NOT PRESENT (2.6L MPV)

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	3	CRANKSHAFT SENSOR, NO G SIGNAL (RX7) SGC SIGNAL NOT PRESENT (929/2.6L MPV, 1.6L MX3) CAMSHAFT SENSOR, NO SGC SIGNAL (V6 626/MX6) DISTRIBUTOR (G1) SHORT CIRCUIT (MPV V6) SGT SIGNAL NOT PRESENT (MX5/MIATA)
	4	CAMSHAFT SENSOR, NO SGT SIGNAL (1.8L MX3) SGT SIGNAL NOT PRESENT (929/1.6L MX3) SGC SIGNAL NOT PRESENT (MX5/MIATA) DISTRIBUTOR (G2) SHORT CIRCUIT (3.0L MPV)
	5	(LEFT) KNOCK SENSOR, OPEN/SHORT CIRCUIT
	6	VSS, NO SIGNAL
	7	RIGHT KNOCK SENSOR, OPEN/SHORT CIRCUIT
	8	MAF/AIR FLOW SENSOR, OPEN/SHORT CIRCUIT
	9	ECT SENSOR, OPEN/SHORT CIRCUIT
	10	IAT SENSOR, OPEN/SHORT CIRCUIT
	11	IAT SENSOR, OPEN/SHORT CIRCUIT
	12	TPS, OPEN/SHORT CIRCUIT
	13	MAP SENSOR, OPEN/SHORT CIRCUIT
	14	BARO SENSOR, OPEN/SHORT CIRCUIT
	15	O2 SENSOR INACTIVE (2.6L MPV, 1.6L MX3, RX7) LEFT HO2 SENSOR STUCK OVER 1500 RPM (2.5L 626/MX6, 929, 1.8L MX3) HO2 SENSOR INACTIVE (2.0L 626/MX6, 3.0L MPV, MX5/MIATA)
	16	EGR SENSOR, OPEN/SHORT CIRCUIT OR STUCK VALVE
	17	O2 SENSOR (INVERSION) INACTIVE (RX7, 2.6L MPV) HO2 SENSOR, STICKING (1.6 MX3, MX5/MIATA) LEFT CLOSED LOOP OPERATION STUCK OVER 1500 RPM (1.8L MX3) LEFT HO2 SENSOR INACTIVE (2.5L 626/MX6, 929) HO2 SENSOR (INVERSION) INACTIVE (2.0L 626/MX6, 3.0L MPV)
	18	TPS (NARROW) OPEN/SHORT
	20	OIL PUMP SENSOR, OPEN/SHORT CIRCUIT
	23	FUEL THERMOSENSOR, OPEN/SHORT CIRCUIT (RX7) HO2 SENSOR INACTIVE, RIGHT BANK (2.5L 626/MX6, 929, 1.8L MX3)
	24	RIGHT CLOSED LOOP OPERATION STUCK OVER 1500 RPM (1.8L MX3) RIGHT HO2 SENSOR INACTIVE (2.5L 626/MX6, 929)
	25	PRC SOLENOID VALVE, OPEN/SHORT CIRCUIT
	26	PURGE SOLENOID VALVE, OPEN/SHORT CIRCUIT OIL PUMP (STP MOTOR) OPEN/SHORT CIRCUIT (RX7)

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	27	METER OIL PUMP, OPEN/SHORT CIRCUIT
	28	EGR VALVE (VAC), OPEN/SHORT CIRCUIT
	29	EGR VALVE (VENT), OPEN/SHORT CIRCUIT
	30	SPLIT AIR BYPASS VALVE, OPEN/SHORT CIRCUIT (RX7)
	30	COLD-START RELAY, OPEN/SHORT (929)
	31	SECONDARY AIR BYPASS VALVE, OPEN/SHORT CIRCUIT
	32	SECONDARY AIR SWITCHING VALVE, OPEN/SHORT CIRCUIT
	33	PORT AIR BYPASS SOLENOID, OPEN/SHORT CIRCUIT
	34	IAC SOLENOID VALVE, OPEN/SHORT CIRCUIT
	35	PRC SOLENOID VALVE 2, OPEN/SHORT CIRCUIT
	36	(RIGHT) O2 SENSOR HEATER CIRCUIT, OPEN/SHORT
	37	METER OIL PUMP, LOW BATTERY VOLTS (RX7)
	37	LEFT O2 SENSOR, HEATER CIRCUIT OPEN/SHORT (929)
	38	WARM-UP SYSTEM VALVE, OPEN/SHORT CIRCUIT
	39	RELIEF 2 SOLENOID VALVE, OPEN/SHORT CIRCUIT
	40	PURGE SOLENOID VALVE, OPEN/SHORT CIRCUIT
	41	VICS SOLENOID VALVE, OPEN/SHORT CIRCUIT (929, 1.6LMX3)
	41	VRIS VALVE 1, OPEN/SHORT (2.5L 626/MX6, 1.8L MX3)
	42	TURBO PRECONTROL SOLENOID VALVE CIRCUIT
	43	WASTEGATE VALVE, OPEN/SHORT CIRCUIT
	44	TURBO CONTROL VALVE, OPEN/SHORT CIRCUIT
	45	CHARGE CONTROL VALVE, OPEN/SHORT CIRCUIT
	46	CHARGE RELIEF VALVE, OPEN/SHORT CIRCUIT (RX7)
	46	VRIS VALVE 2, OPEN/SHORT CIRCUIT (2.5L 626/MX6, 1.8L MX3)
	50	DOUBLE THROTTLE CONTROL SOLENOID VALVE, OPEN/SHORT CIRCUIT
	51	FUEL PUMP RELAY (SPEED)
	54	AIR PUMP RELAY, OPEN/SHORT CIRCUIT
	65	A/C SIGNAL (TCM), OPEN/SHORT CIRCUIT
	71	INJECTION (FRONT SECONDARY), OPEN/SHORT CIRCUIT
	73	INJECTION (REAR SECONDARY), OPEN/SHORT CIRCUIT
	76	SLIP TCC SIGNAL, OPEN/SHORT CIRCUIT

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	77	TORQUE REDUCED SIGNAL, OPEN/SHORT CIRCUIT

OBD II SYSTEMS

YEAR: 1995-1998	DTC NO.	DESCRIPTOR
1995-98 OBD II	P0100	MAF/VAF Circuit Malfunction
	P0102	MAF Sensor Circuit, Low Input
	P0103	MAF Sensor Circuit, High Input
	P0105	MAP/BARO Circuit Malfunction
	P0106	BARO/EGR Boost Sensor Circuit Performance
	P0107	BARO/EGR Boost Sensor Circuit, Low Input
	P0108	BARO/EGR Boost Sensor Circuit, High Input
	P0110	IAT Circuit Malfunction
	P0111	IAT Circuit Performance Problem
	P0112	IAT Circuit, Low Input
	P0113	IAT Circuit, High Input
	P0115	ECT Circuit Malfunction
	P0117	ECT Sensor, Low Input
	P0118	ECT Sensor, High Input
	P0120	Throttle Position Circuit Malfunction
	P0121	TPS Circuit Malfunction
	P0122	TPS Circuit, Low Input
	P0123	TPS Circuit, High Input
	P0125	Coolant Temp. Low for Too Long, no Closed Loop Fuel Control
	P0126	ECT Sensor, Low Temp.
	P0130	O2 Sensor, Bank 1 Sensor 1, Circuit Malfunction
	P0131	Upstream HO2 Sensor Circuit, Bank 1, Low Voltage
	P0132	HO2 Sensor Circuit, Bank 1 Sensor 1, High Voltage
	P0133	Upstream HO2 Sensor, Bank 1, Slow Response
	P0134	HO2 Sensor , Bank 1 Sensor 1, no Activity
	P0135	Upstream HO2 Sensor, Bank 1, Circuit Malfunction
	P0136	Downstream HO2 Sensor Circuit Malfunction, Bank 1
	P0137	Downstream HO2 Sensor, Low Voltage, Bank 1
	P0138	Downstream HO2 Sensor Circuit, Bank 1, High Voltage
	P0140	HO2 Sensor Circuit, Bank 1 Sensor 2, no Activity

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0141	Downstream HO2 Sensor, Bank 1, Heater Circuit Malfunction
	P0142	HO2 Sensor, Bank 1 Sensor 3, Circuit Malfunction
	P0146	HO2 Sensor Circuit, Bank 1 Sensor 3, no Activity
	P0147	HO2 Sensor, Bank 1 Sensor 3, Heater Circuit Malfunction
	P0150	O2 Sensor, Bank 2 Sensor 1, Circuit Malfunction
	P0151	Upstream HO2 Sensor Circuit, Bank 2, Low Voltage
	P0152	HO2 Sensor, Bank 2 Sensor 1, High Voltage
	P0153	Upstream HO2 Sensor, Bank 2, Slow Response
	P0154	O2 Sensor Circuit, Bank 2 Sensor 1, no Activity
	P0155	Upstream HO2 Sensor, Bank 2, Heater Circuit Malfunction
	P0160	O2 Sensor Heater Circuit, Bank 2 Sensor 2, no Activity
	P0161	HO2 Sensor Heater, Bank 2 Sensor 2, Circuit Malfunction
	P0170	Bank 1 Fuel Trim Malfunction
	P0171	Fuel System, A/F Ratio Lean, Bank 1
	P0172	Fuel System, A/F Ratio Rich, Bank 1
	P0173	Bank 2 Fuel Trim Malfunction
	P0174	Fuel System, A/F Ratio Lean, Bank 2
	P0175	Fuel System, A/F Ratio Rich, Bank 2
	P0230	Fuel Pump Primary Circuit Malfunction
	P0231	Fuel Pump Secondary Circuit Low
	P0232	Fuel Pump Secondary Circuit High
	P0300	Random Misfire Detected
	P0301	Cylinder No. 1, Misfire Detected
	P0302	Cylinder No. 2, Misfire Detected
	P0303	Cylinder No. 3, Misfire Detected
	P0304	Cylinder No. 4, Misfire Detected
	P0305	Cylinder No. 5, Misfire Detected
	P0306	Cylinder No. 6, Misfire Detected
	P0320	PIP Sensor Circuit Malfunction
	P0325	Knock Sensor Circuit Malfunction
	P0335	Crankshaft Position Sensor Circuit Malfunction
	P0339	Crankshaft Position Sensor Circuit Intermittent

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0340	Camshaft Position Sensor, Circuit Malfunction
	P0350	Ignition Coil, Primary Circuit, Malfunction
	P0351	Ignition Coil A, Primary Circuit Malfunction
	P0352	Ignition Coil B, Primary Circuit Malfunction
	P0353	Ignition Coil C, Primary Circuit Malfunction
	P0354	Ignition Coil D, Primary Circuit Malfunction
	P0400	EGR Flow, System Malfunction
	P0401	EGR Flow Insufficient
	P0402	EGR Detection, Excessive Flow
	P0420	Catalyst Below Threshold, Bank 1
	P0421	Warm-up Catalyst Efficiency Below Threshold
	P0422	EVAP Control System Malfunction (Leak Check)
	P0430	Catalyst, Bank 2, Below Threshold
	P0440	EVAP Control System Malfunction
	P0441	EVAP Purge Control Malfunction
	P0442	Small Leak Detected in EVAP System
	P0443	EVAP System Purge Control Valve Circuit Malfunction
	P0446	Excess Fuel Tank Pressure or a Vent Control Malfunction
	P0450	EVAP System Pressure Sensor Malfunction
	P0452	Fuel Tank Pressure Sensor, Low Input
	P0453	Fuel Tank Pressure Sensor, High Input
	P0455	EVAP Control System, Leak or Blockage
	P0460	Fuel Level Sensor Circuit Malfunction
	P0461	Fuel Level Sensor Circuit Range Performance
	P0462	Fuel Level Sensor Circuit, Low Input
	P0463	Fuel Level Sensor Circuit, High Input
	P0470	Exhaust Pressure Sensor Malfunction
	P0500	VSS Malfunction
	P0501	VSS Signal Intermittent
	P0503	VSS Circuit Intermittent
	P0505	IAC System Malfunction
	P0506	Idle Control System, RPM Lower than Expected

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0507	Idle Control System, RPM Higher than Expected
	P0510	Closed Throttle Position Switch Malfunction
	P0550	P/S Pressure Switch Circuit Malfunction
	P0603	ECM/PCM KAM Memory Test Error
	P0605	PCM ROM Test Error
	P0703	Brake ON/OFF Switch Input Error
	P0704	Clutch Pedal Position Switch Circuit Malfunction
	P0705	Transmission Range Sensor Circuit Failure
	P0706	Transmission Range Sensor, Short Circuit or Sensor Malfunction
	P0707	Transmission Range Sensor, Low Input
	P0708	Transmission Range Sensor, High Input
	P0710	Transmission Fluid Temp. Sensor Circuit Malfunction
	P0711	Transmission Fluid Temp. Sensor Circuit Malfunction
	P0712	Transmission Fluid Temp. Circuit, Low Input
	P0713	Transmission Fluid Temp. Circuit, High Input
	P0715	Turbine Shaft Speed Sensor Circuit (Signal Lost)
	P0720	Output Shaft Speed Sensor Signal Lost
	P0721	Output Shaft Speed Sensor, Erratic Signal
	P0725	Engine Speed Input Circuit Malfunction
	P0731	Gear 1, Incorrect Ratio
	P0732	Gear 2, Incorrect Ratio
	P0733	Gear 3, Incorrect Ratio
	P0734	Gear 4, Incorrect Ratio
	P0735	Gear 5, Incorrect Ratio
	P0736	Reverse Gear, Incorrect Ratio
	P0740	TCC System Malfunction
	P0741	TCC, Mechanical System Performance
	P0742	TCC Solenoid Valve Stuck ON
	P0743	Torque Converter Clutch System, Electrical Problem
	P0745	Pressure Control Solenoid Malfunction
	P0746	Electrical Pressure Control Solenoid Performance
	P0750	Shift Solenoid A, Malfunction

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0751	Shift Solenoid A, Performance
	P0752	Shift Solenoid 1, Stuck ON
	P0755	Shift Solenoid B, Malfunction
	P0756	Shift Solenoid B, Performance
	P0757	Shift Solenoid 2, Stuck ON
	P0760	Shift Solenoid C, Malfunction
	P0761	Shift Solenoid C, Performance
	P0765	Shift Solenoid 4, Open/Short or PCM Driver Failure
	P0781	1st to 2nd Shift Error
	P0782	2nd to 3rd Shift Error
	P0783	3rd to 4th Shift Error
	P0784	4th to 5th Shift Error
	P1000	OBDII Monitor Drive Cycle Incomplete
	P1001	KOER Self-Test not Complete
	P1100	MAF Sensor Intermittent
	P1101	MAF Sensor Out of Range
	P1102	MAF Inconsistent with TPS, Lower than Expected
	P1103	MAF Inconsistent with TPS, Greater than Expected
	P1110	IAT Sensor (Dynamic Chamber), Open or Short
	P1112	IAT Sensor Intermittent or Out of Range
	P1113	IAT Sensor Circuit (Lysholm Compressor), Open or Short
	P1116	ECT Sensor Out of Range
	P1117	ECT Sensor Intermittent
	P1120	TP Sensor Out of Range/Low
	P1121	TP Sensor, Inconsistent with MAF
	P1122	Throttle Position Closed Switch, Stuck
	P1124	TP Sensor Out of Range/Low
	P1125	TP Sensor, Circuit Intermittent
	P1127	Downstream HO2 Sensor not Tested
	P1128	Upstream HO2 Sensor, Swapped from Bank to Bank
	P1129	Downstream HO2 Sensor Swapped from Bank to Bank
	P1130	Upstream HO2 Sensor, no Switch-Limit, Bank 1

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1131	Upstream HO2 Sensor, no Switch-Lean, Bank 1
	P1132	Upstream HO2 Sensor, no Switch-Rich, Bank 1
	P1137	HO2 Sensor, Bank 1 Sensor 2, Lack of Sensor, Indicates Lean
	P1138	HO2 Sensor, Bank 1 Sensor 2, Lack of Sensor, Indicates Rich
	P1143	HO2 Sensor, Bank1 Sensor 3, Lack of Sensor, Indicates Lean
	P1144	HO2 Sensor, Bank 1 Sensor 3, Lack of Sensor, Indicates Rich
	P1150	Upstream HO2 Sensor, no Switch-Limit, Bank 2
	P1151	Upstream HO2 Sensor, no Switch-Lean, Bank 2
	P1152	Upstream HO2 Sensor, no Switch-Rich, Bank 2
	P1169	HO2 Sensor, Bank 1 Sensor 2, Inversion
	P1170	HO2 Sensor, Bank 1 Sensor 1, Inversion
	P1173	HO2 Sensor, Bank 2 Sensor 1, Inversion
	P1195	EGR Barometric Pressure Sensor, Open or Short
	P1196	Ignition (Start) Switch Input Malfunction
	P1235	Fuel Pump Control Out of Range, Open or Short
	P1236	Fuel Pump Control Out of Range, Open or Short
	P1250	Fuel Pressure Circuit, Open or Short
	P1252	Pressure Regulator Control Solenoid Valve No. 2, Open or Short
	P1260	Theft Detected, Engine Disabled
	P1270	RPM/Vehicle Speed Limiter Reached
	P1309	Misfire Detection Monitor not Enabled
	P1345	No SGC Signal
	P1351	Ignition Diagnostic Monitor Circuit Malfunction
	P1352	Ignition Coil 1, Primary Circuit Malfunction
	P1353	Ignition Coil 2, Primary Circuit Malfunction
	P1354	Ignition Coil 3, Primary Circuit Malfunction
	P1358	Ignition Diagnostic Monitor Out of Range
	P1359	Spark Output Circuit Malfunction
	P1360	Ignition Coil A, Secondary Circuit Malfunction
	P1361	Ignition Coil B, Secondary Circuit Malfunction
	P1362	Ignition Coil C, Secondary Circuit Malfunction
	P1364	Ignition Coil Primary Circuit Malfunction

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1365	Ignition Coil Secondary Circuit malfunction
	P1390	Octane Adjust Out of Range
	P1400	Differential Pressure Feedback EGR Sensor Circuit, Low Voltage
	P1401	Differential Pressure Feedback EGR Sensor Circuit, High Voltage
	P1402	EGR Valve Position Sensor, Open or Short
	P1403	Differential Pressure Feedback EGR Sensor, Hoses Reversed
	P1405	Differential Pressure Feedback EGR Sensor, Upstream Hose Off/Plugged
	P1406	Differential Pressure Feedback EGR Sensor, Downstream Hose Off/Plugged
	P1407	EGR Valve, no Flow Detected
	P1408	EGR Flow, Out of Range
	P1409	EGR Vacuum Regulator, Circuit Malfunction
	P1410	EGR Boost Sensor or Solenoid Valve, Frozen
	P1443	EVAP Control System Circuit Malfunction
	P1444	Purge Flow Sensor Circuit, Low Input
	P1445	Purge Flow Sensor Circuit, High Input
	P1449	Canister Drain Cut Valve, Open or Short
	P1450	Fuel Tank, Unable to Bleed Vacuum
	P1451	EVAP Vent Valve Circuit Malfunction
	P1455	Fuel Tank Level Sensor, Open or Short
	P1457	Purge Solenoid Valve Control System Malfunction
	P1460	Wide-Open Throttle A/C Cut-Off Circuit Malfunction
	P1464	A/C Demand Out of Range
	P1474	Cooling Fan Control, Primary Circuit Malfunction
	P1479	Condenser Fan, Primary Control Circuit Malfunction
	P1485	EGR Solenoid Vacuum Valve, Open or Short
	P1486	EGR Vent Solenoid, Open or Short
	P1487	EGR Boost Solenoid Valve Circuit Open or Short
	P1496	EGR Valve Motor, Coil 1, Open or Short
	P1497	EGR Valve Motor, Coil 2, Open or Short
	P1498	EGR Valve Motor, Coil 3, Open or Short
	P1499	EGR Valve Motor, Coil 4, Open or Short
	P1500	VSS Circuit Intermittent

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1501	VSS Circuit Out of Range
	P1502	VSS Circuit, Signal Lost
	P1504	IAC Circuit Malfunction
	P1505	IAC Circuit at Adaptive Clip
	P1506	IAC Circuit, Overspeed Error
	P1507	IAC Circuit, Underspeed Error
	P1508	Bypass Air Solenoid Valve No. 1, Open or Short
	P1509	Bypass Air Solenoid Valve No. 2, Open or Short
	P1521	Variable Resonance Induction Solenoid 1, Open or Short
	P1522	Variable Resonance Induction Solenoid 2, Open or Short
	P1523	VICS Circuit Malfunction, Open or Short
	P1524	Charge Air Cooler Bypass Solenoid Valve Circuit, Open or Short
	P1525	ABV (Vacuum), Open or Short
	P1526	ABV (Vent), Open or Short
	P1527	Accelerate Warm-up, Open or Short
	P1540	ABV Control System, Open or Short
	P1566	Backup Power Supply, Circuit Malfunction
	P1601	Communication Line Error (A/T)
	P1602	Immobilizer Unit, PCM Communication Error
	P1603	Immobilizer System, Codeword not Registered (PCM)
	P1604	Immobilizer System, Key ID Number Unregistered (PCM)
	P1605	PCM KAM Power Circuit Test Error
	P1608	PCME (CPU) Malfunction
	P1609	PCM Knock I/C Damaged
	P1621	Immobilizer System, Codeword Problem After Engine Crank
	P1622	Immobilizer System, Key ID Number does not Match
	P1623	Immobilizer System, Codeword/Key ID, Read/Write Error (PCM)
	P1624	Immobilizer System, Communication Counter =0
	P1627	ECM/TCS Line Communication Error
	P1628	ECM/TCS Line (ABV) Communication Error
	P1631	Generator Output Voltage Signal, no Electricity
	P1632	Battery Voltage Monitor Signal, Circuit Malfunction

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1633	Battery Voltage, Overcharge
	P1634	Generator Terminal B, Circuit Open
	P1650	PSP Switch Out of Range
	P1651	PSP Switch Input Error
	P1652	PSP Switch Failed ON
	P1701	Transmission Solenoid Malfunction
	P1702	Transmission Range Sensor Circuit, Intermittent Malfunction
	P1703	Brake On/Off Switch Out of Range
	P1704	Digital Transmission Range Sensor Malfunction
	P1705	Transmission Range Sensor, Out of Range
	P1709	KOEO Self-Test, PNP in Gear
	P1711	Transmission Fluid Temp. Circuit Out of Range
	P1713	No Transmission Fluid Temp. Change for Low Range Operation
	P1714	Shift Solenoid 1, Mechanical Failure
	P1715	Shift Solenoid 2, Mechanical Failure
	P1716	Shift Solenoid 3, Mechanical Failure
	P1717	Shift Solenoid 4, Mechanical Failure
	P1718	No Transmission Fluid Temp. Change for High Range Operation
	P1719	OD Drum Speed Signal Lost During Operation
	P1720	No VSS 2 Signal
	P1729	4x4 Low Switch Error
	P1740	TCC Solenoid, Mechanical Failure Detected
	P1741	TCC Control Error
	P1742	TCC Solenoid Failed ON
	P1743	TCC Solenoid Failed ON
	P1744	TCC System Stuck in OFF Position
	P1746	Electric Pressure Control Solenoid, Open Circuit
	P1747	Electric Pressure Control Solenoid, Short Circuit
	P1749	Electric Pressure Control Solenoid, Failed Low
	P1751	Shift Solenoid A Performance
	P1754	Coast Clutch Solenoid Malfunction
	P1756	Shift Solenoid B Performance

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1761	Shift Solenoid C Performance
	P1762	SS3/SS4/OD Band Failure
	P1765	3-2 Timing Valve, Open or Short
	P1770	Overrunning Clutch Solenoid, Open or Short
	P1780	Transmission Control Switch Circuit Out of Range
	P1781	4x4 Low Switch Out of Range
	P1783	Transmission Over Temp. Condition
	P1788	Var. Force Solenoid 2, Circuit Open
	P1789	Var. Force Solenoid 2, Circuit Shorted
	P1790	TPS, Open or Short
	P1792	BARO Circuit Malfunction
	P1794	Battery or Battery Circuit Failure
	P1795	Idle Switch, Open or Short
	P1797	Park/Neutral Signal, Open or Short
	P1804	4WD High Indicator Circuit
	P1806	4WD High Indicator Short to Voltage
	P1808	4WD Low Indicator Circuit
	P1810	4WD Low Indicator Short to Voltage
	P1812	4WD Mode Select Circuit
	P1815	4x4 Shift Control Switch Short to Ground
	P1820	Transfer Case Relay Module, CW Relay Circuit
	P1822	Transfer Case Relay Module, CW Relay Short to Battery Voltage
	P1824	Elec. Shift Relay Circuit
	P1826	Elec. Shift Relay, Short to Voltage
	P1828	Transfer Case Relay Module, CCW Relay Circuit
	P1830	Transfer Case Relay Module, CCW Relay Short to Battery Voltage
	P1846	Transfer Case Touch Drive Plate A Circuit
	P1848	Transfer Case Touch Drive Plate A, Short to Battery Voltage
	P1850	Transfer Case Touch Drive Plate B Circuit
	P1852	Transfer Case Touch Drive Plate B, Short to Battery Voltage
	P1854	Transfer Case Touch Drive Plate C Circuit
	P1856	Transfer Case Touch Drive Plate C, Short to Battery Voltage

YEAR: 1995-1998 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1858	Transfer Case Touch Drive Plate D Circuit
	P1860	Transfer Case Touch Drive Plate D, Short to Battery Voltage
	P1862	Transfer Case Touch Drive Plate (Y/W)
	P1864	Transfer Case Touch Drive Plate (Y/W)
	P1866	Transfer Case System Concern
	P1867	Transfer Case Contact Plate

MITSUBISHI

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1. VEHICLES AND SYSTEMS

Using the Asian cartridge, the following Mitsubishi vehicles can be diagnosed.

MODEL: 1984	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1984					
CORDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE
STARION	2.6L I4 TURBO	G54B	TBI	NONE	MANCODE
TREDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE

MODEL: 1985	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1985					
CORDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE
GALANT	2.4L I4	G64B	MPI	NONE	MANCODE
MIRAGE	1.6L I4 TURBO	G32B	ECI EFI	NONE	MANCODE
STARION	2.6L I4 TURBO	G54B	ECI EFI	NONE	MANCODE
TREDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE

MODEL: 1986	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1986					
CORDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE
GALANT	2.4L I4	G64B	MPI	NONE	MANCODE
MIRAGE	1.6L I4 TURBO	G32B	ECI EFI	NONE	MANCODE
STARION	2.6L I4 TUR INT	G54B	ECI EFI	NONE	MANCODE
STARION	2.6L I4 TURBO	G54B	ECI EFI	NONE	MANCODE
TREDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE

MODEL: 1987	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1987					
CORDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE
GALANT	2.4L I4	G64B	MPI	CHECK	AUTOCODE
MIRAGE	1.6L I4	G32B	ECI EFI	NONE	MANCODE
STARION	2.6L I4 TUR INT	G54B	ECI EFI	CHECK	AUTOCODES
STARION	2.6L I4 TURBO	G54B	ECI EFI	CHECK	AUTOCODES
TREDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE
VAN/WAGON	2.4L I4	G64B	MPI	CHECK	AUTOCODES

MODEL: 1988	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1988					
CORDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE
GALANT SIGMA	3.0L V6	6G72	MPI	CHECK	AUTOCODES
MIRAGE	1.6L I4 TURBO	G32B	ECI EFI	NONE	MANCODE
STARION	2.6L I4 TURBO	G54B	ECI EFI	CHECK	AUTOCODES
TREDIA	1.8L I4 TURBO	G62B	ECI EFI	NONE	MANCODE
VAN/WAGON	2.4L I4	G64B	MPI	CHECK	AUTOCODES

MODEL: 1989	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1989					
GALANT	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 SOHC-8V	4G63	MPI	CHECK	AUTOCODES
MIRAGE	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
MIRAGE	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
MONTERO	3.0L V6	6G72	MPI	CHECK	AUTOCODES
SIGMA	3.0L V6	6G72	MPI	CHECK	AUTOCODES
STARION	2.6L I4 TUR INT	G54B	ECI EFI	CHECK	AUTOCODES

MODEL: 1989 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
VAN/WAGON	2.4L I4	4G64	MPI	CHECK	AUTOCODES

MODEL: 1990	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1990					
ECLIPSE	1.8L I4	4G37	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4	4G63	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4 TURBO	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 SOHC-8V	4G63	MPI	CHECK	AUTOCODES
MIRAGE	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
MIRAGE	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
MONTERO	3.0L V6	6G72	MPI	CHECK	AUTOCODES
PRECIS	1.5L I4	G4AM	MPI	CHECK	AUTOCODES
SIGMA	3.0L V6	6G72	MPI	CHECK	AUTOCODES
TRUCK	2.4L I4	4G64	MPI	CHECK	AUTOCODES
TRUCK	3.0L V6	6G72	MPI	CHECK	AUTOCODES
VAN/WAGON	2.4L I4	4G64	MPI	CHECK	AUTOCODES

MODEL: 1991	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1991					
3000GT	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES
3000GT	3.0L V6 DOHC TUR	6G72	MPI	CHECK	AUTOCODES
ECLIPSE	1.8L I4	4G37	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4	4G63	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4 TURBO	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 SOHC-8V	4G63	MPI	CHECK	AUTOCODES

MODEL: 1991 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
MIRAGE	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
MIRAGE	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
MONTERO	3.0L V6	6G72	MPI	CHECK	AUTOCODES
PRECIS	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
TRUCK	2.4L I4	4G64	MPI	CHECK	AUTOCODES
TRUCK	3.0L V6	6G72	MPI	CHECK	AUTOCODES

MODEL: 1992	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1992					
3000GT	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES
3000GT	3.0L V6 DOHC TUR	6G72	MPI	CHECK	AUTOCODES
DIAMANTE	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES
DIAMANTE	3.0L V6 SOHC	6G72	MPI	CHECK	AUTOCODES
ECLIPSE	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
EXPO	2.4L I4	4G64	MPI	CHECK	AUTOCODES
EXPO LRV	1.8L I4	4G93	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 SOHC-8V	4G63	MPI	CHECK	AUTOCODES
MIRAGE	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
MIRAGE	1.6L I4 DOHC	4G61	MPI	CHECK	AUTOCODES
MONTERO	3.0L V6	6G72	MPI	CHECK	AUTOCODES
TRUCK	2.4L I4	4G64	MPI	CHECK	AUTOCODES
TRUCK	3.0L V6	6G72	MPI	CHECK	AUTOCODES

MODEL: 1993	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1993					
3000GT	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES
3000GT	3.0L V6 DOHC TUR	6G72	MPI	CHECK	AUTOCODES
DIAMANTE	3.0L V6 DOHC	6G72	MPI	CHECK	AUTOCODES
DIAMANTE	3.0L V6 SOHC	6G72	MPI	CHECK	AUTOCODES
DIAMANTE WAGON	3.0L V6 SOHC	6G72	MPI	CHECK	AUTOCODES
ECLIPSE	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
EXPO	2.4L I4	4G64	MPI	CHECK	AUTOCODES
EXPO LRV	1.8L I4	4G93	MPI	CHECK	AUTOCODES
EXPO LRV	2.4L I4	4G64	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 SOHC-16V	4G63	MPI	CHECK	AUTOCODES
GALANT	2.0L I4 SOHC-8V	4G63	MPI	CHECK	AUTOCODES
MIRAGE	1.5L I4 SOHC	4G15	MPI	CHECK	AUTOCODES
MIRAGE	1.8L I4 SOHC	4G93	MPI	CHECK	AUTOCODES
MONTERO	3.0L V6	6G72	MPI	CHECK	AUTOCODES
PRECIS	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
TRUCK	2.4L I4	4G64	MPI	CHECK	AUTOCODES
TRUCK	3.0L V6	6G72	MPI	CHECK	AUTOCODES

MODEL: 1994	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1994					
DIAMANTE	3.0L V6 DOHC	6G72	MPI	JUMPER	MANCODE
DIAMANTE	3.0L V6 SOHC	6G72	MPI	JUMPER	MANCODE
DIAMANTE WAGON	3.0L V6 SOHC	6G72	MPI	JUMPER	MANCODE
ECLIPSE	1.8L I4 SOHC	4G37	MPI	CHECK	AUTOCODES
ECLIPSE	2.0L I4 DOHC	4G63	MPI	CHECK	AUTOCODES

MODEL: 1994 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
ECLIPSE	2.0L I4 DOHC TUR	4G63	MPI	CHECK	AUTOCODES
EXPO	2.4L I4 SOHC	4G64	MPI	JUMPER	MANCODE
EXPO LRV	1.8L I4 SOHC	4G93	MPI	JUMPER	MANCODE
EXPO LRV	2.4L I4 SOHC	4G64	MPI	JUMPER	MANCODE
GALANT	2.4L I4 DOHC	4G64	MPI	JUMPER	MANCODE
GALANT	2.4L I4 SOHC	4G64	MPI	JUMPER	MANCODE
MIRAGE	1.5L I4 SOHC	4G15	MPI	NONE	MANCODE
MIRAGE	1.8L I4 SOHC	4G93	MPI	NONE	MANCODE
MONTERO	3.0L V6 SOHC	6G72	MPI	NONE	MANCODE
MONTERO	3.5L V6 DOHC	6G74	MPI	JUMPER	MANCODE
PRECIS	1.5L I4	G4AJ	MPI	CHECK	AUTOCODES
TRUCK	2.4L I4	4G64	MPI	CHECK	AUTOCODES
TRUCK	3.0L V6	6G72	MPI	CHECK	AUTOCODES

MODEL: 1995	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1995					
3000GT	3.0L V6	6G72	MFI	JUMPER	MILCODES
3000GT	3.0L V6 TURBO	6G72	MFI	JUMPER	MILCODES
DIAMANTE/WAGON	3.0L V6 SOHC	6G72	MFI	NONE	MANCODES
DIAMANTE	3.0L V6 DOHC	6G72	MFI	NONE	MANCODES
ECLIPSE	2.0L I4	420A	MFI	NONE	MANCODES
ECLIPSE	2.0L I4 TURBO	4G63	MFI	OBD II*	AUTOCODES
GALANT	2.4L I4 SOHC	4G64	MFI	NONE	MANCODES
GALANT	2.4L I4 DOHC	4G64	MFI	NONE	MANCODES
MIRAGE	1.5L I4	4G15	MFI	NONE	MANCODES
MIRAGE (CAL)	1.5L I4	4G15	MFI	OBD II*	AUTOCODES
MIRAGE	1.8L I4	4G93	MFI	NONE	MANCODES
MIRAGE (CAL)	1.8L I4	4G93	MFI	OBD II*	AUTOCODES
EXPO LRV	1.8L I4	4G93	MFI	JUMPER	MANCODES
EXPO LRV (CAL)	1.8L I4	4G93	MFI	OBD II*	AUTOCODES

MODEL: 1995 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
EXPO LRV	2.4L I4	4G64	MFI	NONE	MANCODES
EXPO LRV (CAL)	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
EXPO	2.4L I4	4G64	MFI	NONE	AUTOCODES
EXPO (CAL FWD)	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
MONTERO	3.0L V6 12V	4G72	MFI	NONE	MANCODES
MONTERO	3.0L V6 24V	4G72	MFI	NONE	MANCODES
MONTERO	3.5L V6	4G74	MFI	NONE	MANCODES
TRUCK	2.4L I4	4G64	MFI	NONE	MANCODES
TRUCK	3.0L V6	4G72	MFI	NONE	MANCODES

* For Adapter Type OBD II see *COMMON TEST MODES II* section for operating instructions and test mode information.

MODEL: 1996	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1996					
3000GT	3.0L V6	6G72	MFI	OBD II*	AUTOCODES
3000GT	3.0L V6 TURBO	6G72	MFI	OBD II*	AUTOCODES
DIAMANTE	3.0L V6 SOHC	6G72	MFI	OBD II*	AUTOCODES
DIAMANTE	3.0L V6 DOHC	6G72	MFI	OBD II*	AUTOCODES
ECLIPSE	2.0L I4 DOHC	420A	MFI	OBD II*	AUTOCODES
ECLIPSE	2.0L I4 DOHC TURBO	4G63	MFI	OBD II*	AUTOCODES
ECLIPSE	2.4L I4 SOHC	4G64	MFI	OBD II*	AUTOCODES
EXPO	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
EXPO LRV	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
EXPO LRV	1.8L I4	4G93	MFI	OBD II*	AUTOCODES
GALANT	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
MIRAGE	1.5L I4	4G15	MFI	OBD II*	AUTOCODES
MIRAGE	1.8L I4	4G93	MFI	OBD II*	AUTOCODES
MONTERO	3.0L V6 12V	4G72	MFI	OBD II*	AUTOCODES
MONTERO	3.0L V6 24V	4G72	MFI	OBD II*	AUTOCODES
MONTERO	3.0L V6 DOHC	4G74	MFI	OBD II*	AUTOCODES

* For Adapter Type OBD II see *COMMON TEST MODES II* section for operating instructions and test mode information.

MODEL: 1997	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1997					
3000GT	3.0L V6	6G72	MFI	OBD II*	AUTOCODES
3000GT	3.0L V6 TURBO	6G72	MFI	OBD II*	AUTOCODES
DIAMANTE	3.5L V6	6G74	MFI	OBD II*	AUTOCODES
ECLIPSE	2.4L I4	420A	MFI	OBD II*	AUTOCODES
ECLIPSE	2.0L I4 TURBO	4G63	MFI	OBD II*	AUTOCODES
ECLIPSE SPYDER	2.0L I4 TURBO	4G63	MFI	OBD II*	AUTOCODES
ECLIPSE SPYDER	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
GALANT	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
MIRAGE	1.5L I4	4G15	MFI	OBD II*	AUTOCODES
MIRAGE	1.8L I4	4G93	MFI	OBD II*	AUTOCODES
MONTERO	3.5L V6	6G74	MFI	OBD II*	AUTOCODES
MONTERO SPORT	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
MONTERO SPORT	3.0L V6	6G72	MFI	OBD II*	AUTOCODES

* For Adapter Type OBD II see *COMMON TEST MODES II* section for operating instructions and test mode information.

MODEL: 1998	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
1998					
3000GT	3.0L V6	6G72	MFI	OBD II*	AUTOCODES
3000GT	3.0L V6 TURBO	6G72	MFI	OBD II*	AUTOCODES
DIAMANTE	3.5L V6	6G74	MFI	OBD II*	AUTOCODES
ECLIPSE	2.0L I4	420A	MFI	OBD II*	AUTOCODES
ECLIPSE	2.0L I4 TURBO	4G63	MFI	OBD II*	AUTOCODES
ECLIPSE SPYDER	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
ECLIPSE SPYDER	2.0L I4 TURBO	4G63	MFI	OBD II*	AUTOCODES
GALANT	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
MIRAGE	1.5L I4	4G15	MFI	OBD II*	AUTOCODES
MIRAGE	1.8L I4	4G93	MFI	OBD II*	AUTOCODES
MONTERO	3.5L V6	6G74	MFI	OBD II*	AUTOCODES

MODEL: 1998 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ADAPTER TYPE	CODE TYPE
MONTERO SPORT	2.4L I4	4G64	MFI	OBD II*	AUTOCODES
MONTERO SPORT	3.0L V6	6G72	MFI	OBD II*	AUTOCODES

* For Adapter Type OBD II see *COMMON TEST MODES II* section for operating instructions and test mode information.

2. MITSUBISHI SPECIFIC INFORMATION

The Mitsubishi vehicles covered by the Asian Imports Cartridge are separated into two different sections within the Asian Imports Operator's Manual. The vehicle's on-board system will determine which section of the Operator's Manual will need to be used. Vehicles that are OBD II certified have information about the operating test modes in the *COMMON TEST MODES II* section of the Operator's Manual. Vehicles that have OBD or OBD I systems have test mode information in this section of the Operator's Manual. In these sections, you will find information on test modes available, how to connect the tester to the vehicle, and operating instructions for the different test modes. A complete list of Mitsubishi Diagnostic Trouble Codes is included at the back of each section.

To determine which section of the Operator's Manual to use for diagnostic information and instructions, look at Adapter Type of the Vehicle and Systems chart. If the vehicle you are testing has an OBD II adapter type, use the *COMMON TEST MODES II* section of the Operator's Manual. If the vehicle you are testing does not have the OBD II Adapter Type, use this section to diagnose the vehicle under test.

3. TEST MODES AVAILABLE

The following test modes are available when testing Mitsubishi vehicles. Operating instructions for test modes other than the DTC Entry and DTCs are included in the *COMMON TEST MODES I* section. There are also Mitsubishi specific instructions for operating the test modes. Refer to *TEST MODES* on page 17.

MODE F1: DTC ENTRY

Submode F0: How To Read
Submode F1: Enter DTC(s)
Submode F2: DTC List
Submode F3: Review DTC
Submode F4: Clear DTC(s)

MODE F2: DTC

Submode F1: Read DTC(s)
Submode F2: DTC List
Submode F3: Review DTC
Submode F4: Clear DTC(s)

MODE F5: SYSTEM TESTS

Submode F0: Prep Vehicle

MODE F8: INFORMATION

Submode F1: DLC Location*
Submode F3: ID Info
Submode F4: DJC Location*

* Note that not all models support DJC, or DLC Location Test modes. The tester will automatically choose which test mode to display, depending on your vehicle selection.

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Mitsubishi vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Refer to the Vehicles and Systems table to see if the vehicle you are testing requires the Check Adapter Cable. If so, connect the Mitsubishi Check Adapter Cable to the end of the DLC cable, then connect the yellow connector end to the vehicle Check connector.

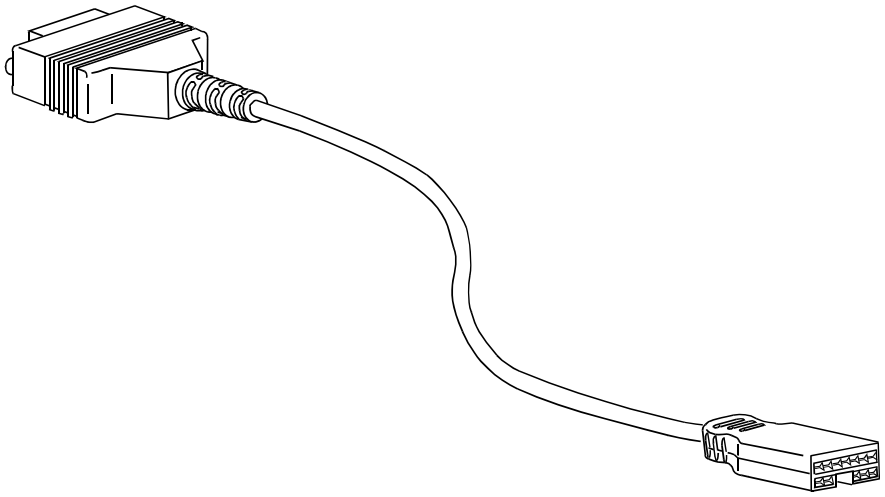


FIGURE 1-1. Mitsubishi Check Adapter Cable

3. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery clip adapter (P/N 02001636).

> **NOTE**
>
> Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery clip adapter.

4. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

FIGURE 1-2. Tester stand-alone display

5. If the display is correct, press ENTER. If the display is not correct, refer to *IF YOU'RE HAVING A PROBLEM* on page 7 of *APPENDICES*.
6. Follow the instructions in *SELECTING THE VEHICLE* on page 15 to select the vehicle type you are testing by entering required vehicle information into the tester.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite the manufacturer you wish to select.

Press ↑ or ↓ to scroll to Mitsubishi. Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models; 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE AND ENGINE TYPE

Next, the Select Engine menu is displayed. Press NO until the engine and fuel type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size, and additional information such as the type of fuel system.

SELECT MODE MENU

When the preceding steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to *TEST MODES* on page 17, and the *COMMON TEST MODES I* section for instructions on operating the test modes with Mitsubishi vehicles.

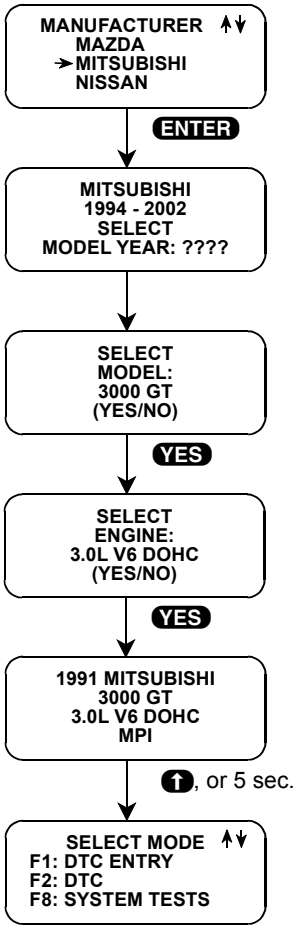


FIGURE 1-3. Mitsubishi Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
EXIT	Return to previous display.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Mitsubishi vehicles may be selected.

Operating instructions for test modes other than DTC Entry and DTCs are included in the *COMMON TEST MODES I* section. You may select these modes without connecting the tester to the vehicle.

READING CODES

Detailed operating instructions for using Modes F1: DTC Entry and F2: DTC with Mitsubishi vehicles are included in the following procedure. F1: DTC Entry is displayed with all Mitsubishi vehicles, and F2: DTC is automatically displayed with Mitsubishi vehicles that have "CHECK" as the adapter type listed in Vehicles and Systems section.

NOTE

Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

MODE F1: DTC ENTRY

When Mode F1: DTC Entry is selected, the tester displays submodes which, after your selection, can provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory buffer), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

DTC ENTRY SUBMODES
F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Manually reading DTCs

To manually read Diagnostic Trouble Codes (DTCs) on Mitsubishi vehicles from 1984-95, there are 2 methods that can be used. The most common method requires an analog voltmeter. Using the analog voltmeter set to a 20v scale and connected to the Data Link Connector (DLC), the DTC can be interpreted from the analog voltmeter needle flashes. The second method requires the 16 pin Mitsubishi Jumper (P/N 02002095) which connects 2 pins of the 16 pin DLC to flash DTCs on the instrument panel mounted Malfunction Indicator Lamp (MIL).

For the automobile manufacturers that mention the use of an analog voltmeter to read manual DTCs, the Mastertech Oscilloscope may be used. Set up the single channel oscilloscope and make connections the same way as the analog voltmeter (above). Choose the 20v/division scale and a slow time/division (e.g., 1-2 sec/division)—the DTCs will be shown as a waveform on the display.

Note that manually retrieving DTCs from select 1994-95 Mitsubishi vehicles requires you to locate and jumper the 16 pin Diagnostic Connector. The vehicles that require the use of a jumper are noted as "Jumper" in the Adapter Type column in the Mitsubishi coverage table (found at the beginning of this section). Refer to the section on manually reading DTCs from the 1994-95 Mitsubishi vehicles in this section.

To manually read DTCs on select 1994-95 Mitsubishi vehicles, locate the Malfunction Indicator Lamp (MIL) and observe the flashing MIL.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the ECU, the tester can define the code. A complete list of Mitsubishi DTCs is also included in *MITSUBISHI DIAGNOSTIC TROUBLE CODES (DTCs)* on page 25.

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the manual for this information, make sure that you are following the correct steps for the system that you are working on.

Submode F1: Enter DTC(s)

On Mitsubishi vehicles, the Enter DTCs submode allows you to enter manually read DTCs. This submode provides you with a text description of the numeric DTC that was entered into the tester.

The Enter DTC Submode displays two question marks for DTC Entry. The tester screen prompts you to enter the DTCs read from an analog voltmeter or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the analog voltmeter or MIL. Incorrect voltmeter or MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the *COMMON TEST MODES I* section.

Mitsubishi service and repair information indicates that Code 0 is supported for OBD systems. Code 0 refers to ECU-related failures, and is valid when the engine MIL does not illuminate or will not illuminate for 2 seconds when turning ignition on. Refer to the service manual for further explanation of Code 0.

Refer to the appropriate procedure for manually reading ECU LED DTCs on the following pages.

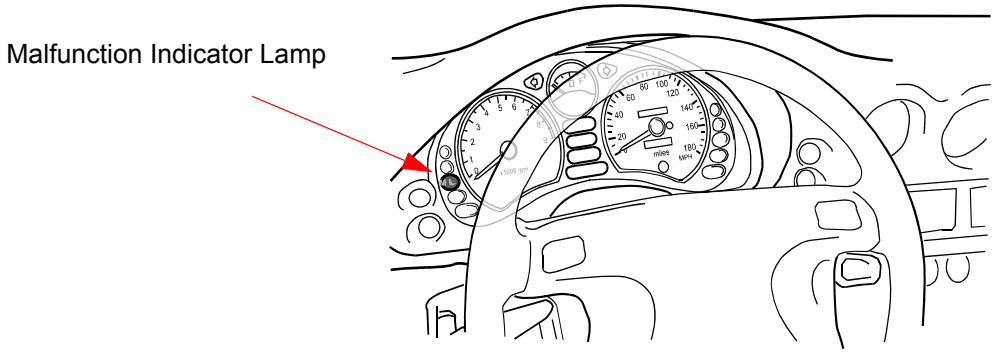


FIGURE 1-4. Malfunction Indicator Lamp

To manually read DTCs from models that use 12 pin or 12 pin and 16 pin DLC and analog voltmeter, do the following:

DLC type is vehicle dependent; refer to information displayed on tester F0: HOW TO READ for DLC type.

1. Locate the 12 pin or 12 pin and 16 pin Diagnostic Connector.

2a. **12 PIN DLC ONLY:** Connect analog voltmeter red lead to pin 1 diagnostic terminal and voltmeter black lead to pin 12 (ground) terminal of diagnostic connector.

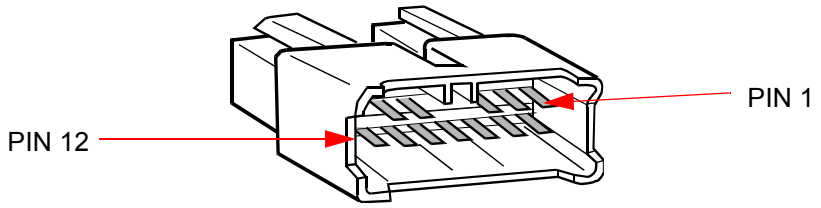
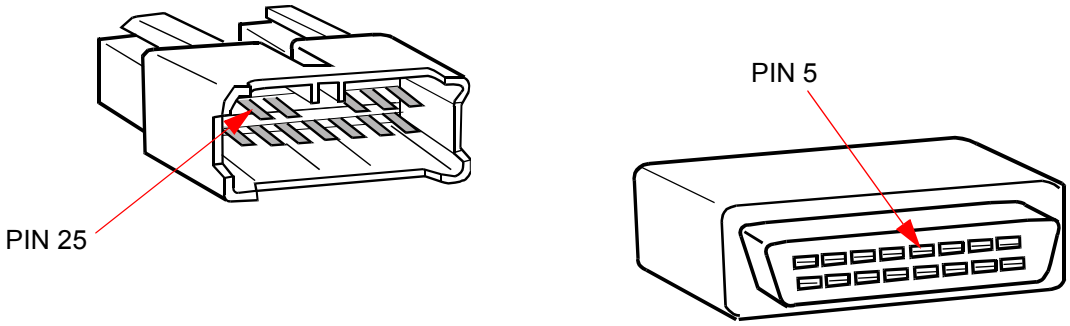


FIGURE 1-5. Most Mitsubishi Vehicles

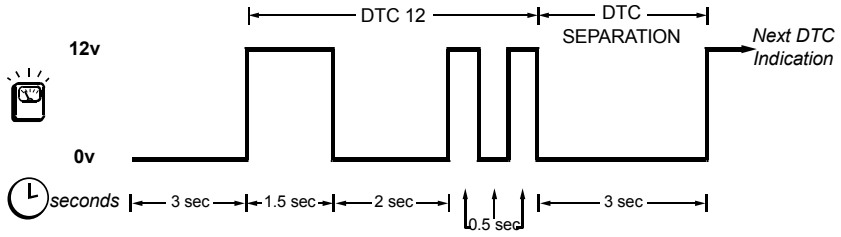
2b. **12 PIN and 16 PIN DLC ONLY:** Connect analog voltmeter red lead to pin 25 of 12 pin DLC, and black lead to pin 5 of 16 pin DLC.



3. Turn ignition switch to ON.
4. DTC indication will begin on voltmeter.

   Voltmeter will fluctuate 0v to 12v if DTCs are stored in ECU. If a DTC is stored in ECU, the first number of 12v, 1.5 sec. indications will equal the 10s digit of a 2-digit DTC. After a 2.0 second pause, the second number of 12v, 0.5 sec. indications will equal the 1s digit. DTCs are separated by 0v indication for 3.0 sec.

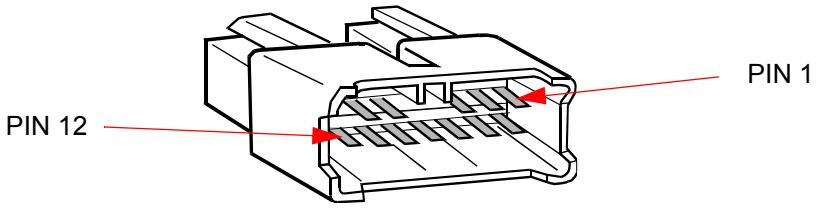
5. If no malfunctions are present, meter will read 12v once per second.
6. After recording DTCs turn ignition switch off.
7. Disconnect voltmeter leads.
8. Erase DTCswhen all repairs are completed.



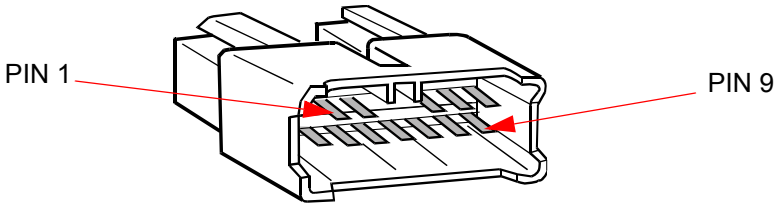
To manually read DTCs from 1985-87 Mitsubishi Galant, 1987-88 Mitsubishi Van/Wagon that use 9 pin or 12 pin DLC and Analog Voltmeter with Digital Decimal output, do the following:

1. Locate the 9 or 12 pin Diagnostic Connector.

2a. Connect analog voltmeter red lead to pin 1 diagnostic terminal and voltmeter black lead to pin 12 (12 pin) or pin 9 (9 pin) terminal of diagnostic connector.



2b. Same as in Step 2a, but use Pin 1 and Pin 9.



3. Turn ignition switch to ON.

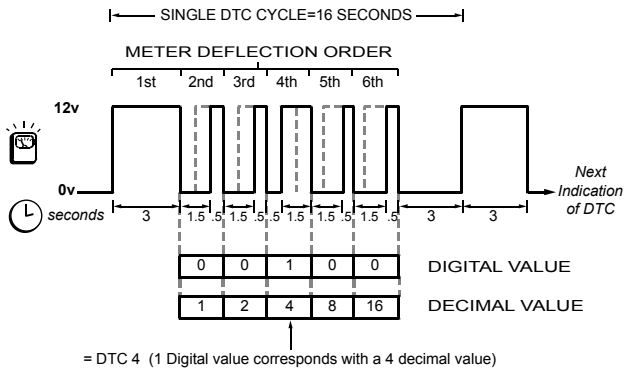
   Each DTC output cycle takes 16s. The first 12v deflection corresponds to a 3 sec. Start indication; second 12v deflection corresponds to a decimal value of 1; third 12v deflection corresponds to a decimal value of 2; fourth 12v deflection corresponds to a decimal value of 4; fifth 12v deflection corresponds to a decimal value of 8; sixth 12v deflection corresponds to a decimal value of 16, followed by a 0v Stop indication for 3s. DTCs are decoded by interpreting the ON time of meter 12v deflections 2-6. If the meter displays 12v for 1.5 sec., then that digital value is 1. If the meter displays 12v for 0.5 sec., then that digital value is 0. To get the value of the DTC add the decimal value of digital 1's obtained in the meter deflection order. DTCs are separated by 12v, 3 sec. reading after the Stop indication.

4. The normal DTC condition is indicated by meter indications 2-6, which are 12v, 1.5 sec. deflections separated by 0v, 0.5 sec.

5. After recording DTCs turn ignition switch off.

6. Disconnect voltmeter leads.

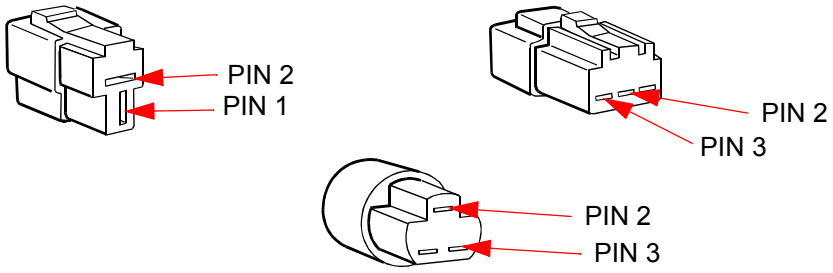
7. Erase DTCs when all repairs are completed.



To manually read DTCs from Models that use 2 pin or 3 pin DLC and analog voltmeter, do the following:

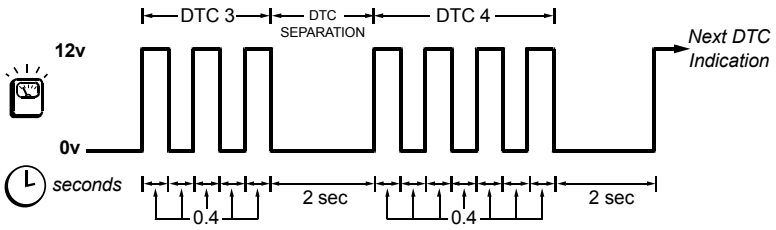
DLC type is vehicle dependent; refer to information displayed on tester F0: HOW TO READ for DLC type.

1. Locate the 2 pin or 3 pin Diagnostic Connector.
2. For the **2 pin** diagnostic connector, connect analog voltmeter red lead to pin 1 diagnostic terminal and voltmeter black lead to pin 2 (ground) terminal of diagnostic connector. For the **3 pin** diagnostic connector, connect analog voltmeter red lead to pin 2 diagnostic terminal and voltmeter black lead to pin 3 (ground) terminal of diagnostic connector.



3. Turn ignition switch to ON.
4. DTC indication will begin on voltmeter.

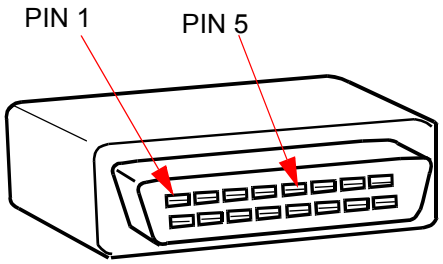
   Voltmeter will fluctuate 0v to 12v if DTCs are stored in ECU. If a DTC is stored in ECU, the first number of 12v, 0.4s indications will equal the 1s digit of a 1-digit DTC. DTC 12v pulses will be output every 0.4s. DTCs are separated by 0v for 2s indication.
5. If no DTCs are in ECU, voltmeter will read constant 12v.
6. After recording DTCs turn ignition switch off.
7. Disconnect voltmeter leads.
8. Erase DTCs when all repairs are completed.



To manually read DTCs from 1994-95 Mitsubishi Vehicles using the dashboard malfunction indicator lamp, do the following:

DLC type is vehicle dependent; refer to information displayed on tester F0: HOW TO READ for DLC type.

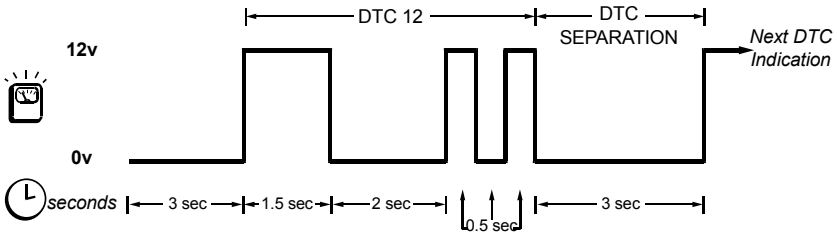
1. Locate the 16 pin Diagnostic Connector.
2. Jumper the 16 pin diagnostic connector pins 1 and 5 with the single wire Mitsubishi/Chrysler Imports jumper (P/N 02002106). Use F4: DJC Location for diagnostic connector location.



3. Turn ignition switch ON.
4. Observe the Malfunction Indicator Lamp (MIL) to read DTCs.

   MIL will turn ON/OFF if DTCs are stored in ECU. If a DTC is stored in ECU, the first number of MIL flashes indicates the 10s digit of a 2-digit DTC. After a 2.0 second pause, the second number of MIL flashes indicates the 1s digit. Each DTC is separated by MIL OFF for 3.0s.

5. If no malfunctions are present, MIL will read ON once per second.
6. After recording DTCs turn ignition switch off.
7. Disconnect jumper leads.
8. Erase DTCs when all repairs are completed.



Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter or MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter or MIL. You can "Select" the DTC on the tester screen for later review or printing. Refer to the *COMMON TEST MODES I* section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTC(s) that you entered or selected in the tester. The description of the entered or selected DTC(s) will be displayed, along with a numerical summary of the entered or selected DTC(s). Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory from DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

MODE F2: DTC

To read DTCs on all 1989-93 and select 1987-88 and 1994-95 Mitsubishi vehicles, you will need to locate the vehicle DLC and connect the Mitsubishi Check Adapter to the tester and vehicle.

To locate the DLC, select F1: DLC LOCATION from the Information menu. If necessary, refer to the *COMMON TEST MODES I* section for further instructions.

When Mode F2: DTC is selected, the tester displays four DTC submodes:

F1: READ DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Submode F1: Read DTC(s)

This submode provides automated DTC retrieval from the vehicle ECU. Step by step screen instructions guide you to connect the YELLOW Mitsubishi Check adapter to the vehicle DLC and to start and warm the engine to normal operating temperature. This is performed by following the tester instruction screens. If you have trouble, additional F1: READ DTC(s) retrieval information is described below.

This submode is available for all 1989-93 and select 1987, 1988, and 1994-95 Mitsubishi vehicles. If you are unsure of the Read DTC test application, check the Code Type column in the Mitsubishi Vehicle Coverage table (found at the beginning of this section). If the ECU Modes column indicates "Autocodes", then the vehicle supports F1: READ DTC(s).

NOTE

When reading DTCs from Mitsubishi vehicles make sure the engine is at normal operating temperature and testing is performed in a well ventilated area.

To read DTCs from all 1989-93 and selected 1987, 1988, and 1994-95 Mitsubishi ECUs using the F1: Read DTCs mode in Asian Imports cartridge, do the following:

1. Insert Asian cartridge into MASTERTECH or TECH 1/TECH 1A.
2. Connect Mitsubishi Check adapter (Yellow) to DLC.
3. Connect the Check adapter to the vehicle DLC. Press F1: DLC location from the Information menu for Data Link Connector location assistance.
4. Power MASTERTECH or TECH 1/TECH 1A with 12v power cable.
5. Select Mitsubishi vehicle to test.
6. Press F2: DTCs from Mitsubishi test mode menu.
7. Press F1: READ DTCs submode from DTC test menu. Follow instructions on the tester display.

8. Tester will automatically command the vehicle ECU into the correct mode required to read DTCs, and will display all received DTCs on the tester display.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the analog voltmeter or MIL. as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter or MIL. You can "Select" the DTC on the tester screen for later review or printing. Refer to the *COMMON TEST MODES I* section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option 1 is a series of instructions which inform you how to clear DTCs from the ECU. Option 2 clears DTC's from the tester's memory that you entered or selected. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

NOTE	
	Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

7. MITSUBISHI DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Mitsubishi vehicles are listed in the following tables.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD, OBD I SYSTEMS

YEAR:1984	DTC NO.	DESCRIPTOR
1984	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SWITCH OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	8	VEHICLE SPEED SENSOR OR CKT

YEAR: 1985	DTC NO.	DESCRIPTOR
1985	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SWITCH OR CKT
	7	ENGINE COOLANT TEMP. SENSOR

YEAR:1986	DTC NO.	DESCRIPTOR
1986	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE

YEAR:1986	DTC NO.	DESCRIPTOR
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SENSOR OR CKT FAILURE BARO SENSOR OR CIRCUIT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SWITCH OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	8	NO. 1 CYL SENSOR OR CKT FAILURE
	9	NORMAL OPERATION

YEAR:1987	DTC NO.	DESCRIPTOR
1987	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE CRANK ANGLE SENSOR OR CKT
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SENSOR OR CKT FAILURE BARO SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SWITCH OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	8	NO. 1 CYL TDC SENSOR OR CKT

YEAR:1988	DTC NO.	DESCRIPTOR
1988	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE CRANK ANGLE SENSOR OR CKT
	3	AIR FLOW SENSOR OR CKT FAILURE
	4	PRESSURE SENSOR OR CKT FAILURE BARO SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SWITCH OR CKT MOTOR POSITION SENSOR OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	8	NO. 1 CYL TDC SENSOR OR CKT
	11	O2 SENSOR OR CKT FAILURE

YEAR:1988	DTC NO.	DESCRIPTOR
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	NO. 1 CYL TDC SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR

YEAR:1989	DTC NO.	DESCRIPTOR
1989	0	ECU OR CIRCUIT FAILURE
	1	O2 SENSOR OR CKT FAILURE
	2	IGNITION SIGNAL OR CKT FAILURE
	3	AIR FLOW SENSOR OR CKT FAILURE
	5	TP SENSOR OR TPS CKT FAILURE
	6	ISC MOTOR POS. SWITCH OR CKT
	7	ENGINE COOLANT TEMP. SENSOR
	11	O2 SENSOR OR CKT FAILURE HEATED O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SENSOR OR CKT ISC MOTOR POS. SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	NO. 1 CYL TDC SENSOR OR CKT TDC SENSOR OR CIRCUIT FAILURE CAMSHAFT POS. SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE

YEAR:1989	DTC NO.	DESCRIPTOR
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE IGNITION SIGNAL OR CKT FAILURE

YEAR:1990	DTC NO.	DESCRIPTOR
1990	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE HEATED O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SENSOR OR CKT ISC MOTOR POS. SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	NO. 1 CYL TDC SENSOR OR CKT NO. 1 & 4 CYL. TDC SENSOR OR CKT TDC SENSOR OR CIRCUIT FAILURE CAMSHAFT POS. SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE IGNITION SIGNAL OR CKT FAILURE

YEAR:1991	DTC NO.	DESCRIPTOR
1991	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE REAR BANK O2 OR CKT FAILURE HEATED O2 SENSOR OR CKT FAILURE
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SENSOR OR CKT ISC MOTOR POS. SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	NO. 1 CYL TDC SENSOR OR CKT NO. 1 & 4 CYL. TDC SENSOR OR CKT TDC SENSOR OR CIRCUIT FAILURE CAMSHAFT POS. SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	36	IGNITION TIMING ADJUSTMENT
	39	O2 SENSOR OR CKT FAILURE FRONT BANK O2 SENSOR OR CKT
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGNITION COIL OR CKT FAILURE IGNITION SIGNAL OR CKT FAILURE IGN SIGNAL OR CKT (NO. 1 & 4 CYL)
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	61	TORQUE REDUCED SIGNAL OR CKT
	62	INDUCTION CNTRL VALVE POS. SNSR

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE HEATED O2 SENSOR OR CKT FAILURE REAR BANK HEATED O2 SNSR OR CKT
	12	AIR FLOW SENSOR OR CKT FAILURE
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	MOTOR POSITION SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	TDC SENSOR OR CIRCUIT FAILURE NO.1 CYL TDC SENSOR OR CKT NO.1 & 4 CYL. TDC SENSOR OR CKT CAMSHAFT POS. SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	36	IGNITION TIMING ADJUSTMENT
	39	FRONT BANK O2 SENSOR OR CKT
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGN SIGNAL OR CKT (NO. 1 & 4 CYL) IGNITION SIGNAL OR CKT FAILURE
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	55	IAC VALVE POS. SENSOR OR CKT
	61	TORQUE REDUCED SIGNAL OR CKT
	62	INDUCTION CNTRL VALVE POS. SNSR
	71	VACUUM CONTROL SOLENOID VALVE
	72	VENT CONTROL SOLENOID VALVE

YEAR: 1993	DTC NO.	DESCRIPTOR
1993	0	ECU OR CIRCUIT FAILURE
	11	O2 SENSOR OR CKT FAILURE HEATED O2 SENSOR OR CKT FAILURE O2 SNSR OR FRONT HEATED O2 SNSR FRONT O2 SENSOR OR CKT FAILURE REAR BANK HEATED O2 SNSR OR CKT
	12	VOLUME AIR FLOW SNSR OR CKT
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	ISC MOTOR POS. SENSOR OR CKT MOTOR POSITION SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	CAMSHAFT POS. SENSOR OR CKT NO.1 CYL TDC SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	32	MAP SENSOR OR CKT FAILURE
	36	IGNITION TIMING ADJUSTMENT
	39	FRONT HEATED O2 SENSOR OR CKT
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGNITION SIGNAL OR CKT FAILURE IGN SIGNAL OR CKT (NO. 1 & 4 CYL)
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	55	IAC VALVE POS. SENSOR OR CKT
	59	REAR HEATED O2 SENSOR OR CKT
	61	TORQUE REDUCED SIGNAL OR CKT
	62	INDUCTION CNTRL VALVE POS. SNSR
	71	TRACTION CONTROL VACUUM SOLENOID
	72	TRACTION CONTROL VENT SOLENOID

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	0	ECU OR CIRCUIT FAILURE
	11	HEATED O2 SENSOR OR CKT FAILURE O2 SENSOR OR CKT FAILURE FRONT HEATED O2 OR CKT FAILURE O2 SNSR OR FRONT HEATED O2 SNSR HTD O2 SNSR OR LF HTD O2 SNSR.
	12	VOLUME AIR FLOW SNSR OR CKT
	13	IAT SENSOR OR CKT FAILURE
	14	TP SENSOR OR TPS CKT FAILURE
	15	ISC MOTOR POS. SWITCH OR CKT MOTOR POSITION SENSOR OR CKT
	21	ENGINE COOLANT TEMP. SENSOR
	22	CRANK ANGLE SENSOR OR CKT
	23	CAMSHAFT POS. SENSOR OR CKT
	24	SPEED SENSOR OR CKT FAILURE
	25	BARO SENSOR OR CKT FAILURE
	31	KS OR KS CIRCUIT FAILURE
	32	MAP SENSOR OR CKT FAILURE
	36	IGNITION TIMING ADJUSTMENT
	39	RF HEATED O2 SENSOR OR CKT
	41	INJECTOR OR CKT FAILURE
	42	FUEL PUMP OR CKT FAILURE
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGN SIGNAL OR CKT (NO.1 & 4 CYL) IGNITION SIGNAL OR CKT FAILURE
	52	IGN SIGNAL OR CKT (NO. 2 & 5 CYL) IGN SIGNAL OR CKT (NO. 2 & 3 CYL)
	53	IGN SIGNAL OR CKT (NO. 3 & 6 CYL)
	55	IAC VALVE POS. SENSOR OR CKT
	59	LR HEATED O2 SENSOR OR CKT REAR HEATED O2 SENSOR OR CKT
	61	TORQUE REDUCED SIGNAL OR CKT
	62	INDUCTION CNTRL VALVE POS. SNSR
	69	RR HEATED O2 SENSOR OR CKT
	71	TRACTION CONTROL VACUUM SOLENOID
	72	TRACTION CONTROL VENT SOLENOID

YEAR:1995	DTC NO.	DESCRIPTOR
1995	11	(LEFT) FRONT HO2 SENSOR OR CIRCUIT
	12	VOLUME AIR FLOW SENSOR OR CIRCUIT
	13	IAT SENSOR OR CIRCUIT
	14	TPS OR CIRCUIT
	15	IDLE SPEED CONTROL SENSOR OR CIRCUIT
	21	ECT SENSOR OR CIRCUIT
	22	CRANKSHAFT POSITION SENSOR OR CIRCUIT
	23	CAMSHAFT POSITION SENSOR OR CIRCUIT
	24	VEHICLE SPEED SENSOR OR CIRCUIT
	25	BARO PRESSURE SENSOR OR CIRCUIT
	31	KNOCK SENSOR OR CIRCUIT
	32	MAP SENSOR CIRCUIT
	36	IGNITION TIMING ADJUSTMENT SIGNAL OR CIRCUIT
	39	(RIGHT FRONT) HO2 SENSOR OR CIRCUIT
	41	INJECTOR CIRCUIT
	42	FUEL PUMP CIRCUIT
	43	EGR SYSTEM: VALVE, SOLENOID, VAC, OR TEMP. SENSOR
	44	IGNITION COIL OR POWER, CYLINDERS 1/4
	52	IGNITION COIL OR POWER, CYLINDERS 2/3 (4 CYLINDER)
	52	IGNITION COIL OR POWER, CYLINDERS 2/5 (6 CYLINDER)
	53	IGNITION COIL OR POWER, CYLINDERS 3/6
	55	IAC VALVE POSITION SENSOR OR CIRCUIT
	59	(LEFT) REAR HO2 SENSOR OR CIRCUIT
	61	TORQUE REDUCTION SIGNAL
	62	INDUCTION VALVE POSITION SENSOR CIRCUIT
	69	RIGHT REAR HO2 SENSOR OR CIRCUIT
	71	TRACTION CONTROL (VACUUM) SOLENOID OR CIRCUIT
	72	TRACTION CONTROL (VENT) SOLENOID OR CIRCUIT

Mitsubishi Eclipse Non-Turbo DTCs

YEAR	DTC NO.	DESCRIPTOR
1995	11	LOSS OF CRANK SIGNAL AT PCM OR TIMING BELT SKIPPED
	13	NO CHANGE IN MAP SENSOR FROM START TO RUN
	14	MAP SENSOR VOLTAGE HIGH OR LOW
	15	VSS SIGNAL NOT PRESENT
	16	KNOCK SENSOR 1, CIRCUIT MALFUNCTION
	17	ENGINE TEMP. TOO COLD TOO LONG, NO CLOSED LOOP FUEL CONTROL
	21	HO2 SENSOR CIRCUIT MALFUNCTION
	22	ECT VOLTAGE HIGH OR LOW
	23	IAT VOLTAGE HIGH OR LOW
	24	TPS VOLTAGE HIGH OR LOW, DOES NOT AGREE WITH MAP SENSOR
	25	IAC MOTOR CIRCUIT MALFUNCTION, TARGET IDLE NOT REACHED
	27	FUEL INJECTOR CONTROL CIRCUIT MALFUNCTION
	31	EVAP SYSTEM MALFUNCTION
	32	EGR SOLENOID OR CIRCUIT MALFUNCTION
	33	A/C CLUTCH RELAY OR CIRCUIT MALFUNCTION
	35	HIGH OR LOW FAN RELAY CIRCUIT MALFUNCTION
	36	SECONDARY AIR INJECTION SYSTEM MALFUNCTION
	37	PNP SWITCH FAILURE
	41	GENERATOR FIELD NOT SWITCHING
	42	ASD/FUEL PUMP RELAY CIRCUIT MALFUNCTION
	43	IGNITION COIL PRIMARY CIRCUIT MALFUNCTION, CYLINDER MISFIRE
	44	BATTERY TEMP. SENSOR OUT OF RANGE
	46	CHARGING SYSTEM VOLTAGE HIGH
	47	CHARGING SYSTEM VOLTAGE LOW
	51	FUEL SYSTEM LEAN

YEAR	DTC NO.	DESCRIPTOR
	52	FUEL SYSTEM RICH
	53	PCM FAILURE, SPI COMMUNICATIONS
	54	NO CAM SIGNAL AT PCM
	62	PCM FAILURE, SRI MILE NOT STORED
	63	PCM FAILURE, EEPROM WRITE DENIED
	64	CATALYTIC CONVERTER EFFICIENCY FAILURE
	65	PSP SWITCH FAILURE
	66	NO CCD MESSAGES FROM TCM

OBD II SYSTEMS

YEAR: 1995-98	DTC NO.	DESCRIPTOR
1995-98 OBD II	P0100	Volume Air Flow Circuit Malfunction
	P0105	BARO Pressure Circuit Malfunction
	P0106	BARO Pressure Sensor, Out of Range
	P0107	MAP Sensor, Low Voltage
	P0108	MAP Sensor, High Voltage
	P0110	IAT Sensor Circuit Malfunction
	P0112	IAT Sensor, Low Voltage
	P0113	IAT Sensor, High voltage
	P0115	ECT Circuit Malfunction
	P0117	ECT Sensor, Low voltage
	P0118	ECT Sensor, High Voltage
	P0120	TPS Circuit Malfunction
	P0121	TPS Voltage Does not Match MAP
	P0122	TPS, Low Voltage
	P0123	TPS, High Voltage
	P0125	Excessive Time to Enter Closed Loop
	P0130	(Right) Front O2 Sensor, Malfunction
	P0131	Upstream HO2 Sensor, Voltage Grounded
	P0132	Upstream HO2 Sensor, Shorted to Heater Circuit Voltage
	P0133	Upstream HO2 Sensor, Response
	P0134	Upstream HO2 Sensor, Stays at Center
	P0135	(Right) Front HO2 Sensor, Malfunction
	P0136	Right Rear O2 Sensor, Malfunction
	P0137	Downstream HO2 Sensor, Voltage Grounded
	P0138	Downstream HO2 Sensor, Shorted to Heater Circuit Voltage
	P0139	Downstream HO2 Sensor, Stays at Center
	P0140	Downstream HO2 Sensor, Stays at Center
	P0141	(Right) Rear HO2 Sensor Malfunction
	P0150	(Left) Rear O2 Sensor Malfunction
	P0155	(Left) Front HO2 Sensor Malfunction

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0156	(Left) Rear O2 Sensor Malfunction
	P0161	HO2 Sensor Heater Circuit Malfunction, Bank 2 Sensor 2
	P0170	Bank 1 Fuel Trim Malfunction
	P0171	Fuel System Lean
	P0172	Fuel System Rich
	P0173	Bank 2 Fuel Trim Malfunction
	P0201	Injector Circuit, Cylinder No. 1, Malfunction
	P0202	Injector Circuit, Cylinder No. 2, Malfunction
	P0203	Injector Circuit, Cylinder No. 3, Malfunction
	P0204	Injector Circuit, Cylinder No. 4, Malfunction
	P0205	Injector Circuit, Cylinder No. 5, Malfunction
	P0206	Injector Circuit, Cylinder No. 6, Malfunction
	P0220	Fuel Pump Relay Control Circuit
	P0300	Random Misfire Detected
	P0301	Cylinder No. 1, Misfire Detected
	P0302	Cylinder No. 2, Misfire Detected
	P0303	Cylinder No. 3, Misfire Detected
	P0304	Cylinder No. 4, Misfire Detected
	P0305	Cylinder No. 5, Misfire Detected
	P0306	Cylinder No. 6, Misfire Detected
	P0325	Knock Sensor 1, Circuit Malfunction
	P0335	Crankshft Position Sensor Circuit Malfunction
	P0340	Camshft Position Sensor Circuit Malfunction
	P0351	Ignition Coil No. 1 Primary Circuit Malfunction
	P0352	Ignition Coil No. 2 Primary Circuit Malfunction
	P0400	EGR Flow Malfunction
	P0401	EGR System Failure
	P0403	EGR Solenoid Malfunction
	P0420	Bank 1 Catalyst Efficiency Below Threshold
	P0421	Warm Up Catalyst, Bank 1, Efficiency Below Threshold
	P0422	Catalytic Converter Efficiency failure
	P0431	Warm Up Catalyst, Bank 2, Efficiency Below Threshold

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0440	EVAP Emission Control System Malfunction
	P0441	Evaporative Purge Flow Monitor Failure
	P0442	EVAP Control system, Small Leak Detected
	P0443	EVAP Control System, Purge Control Valve, Circuit Malfunction
	P0446	EVAP Control System, Vent Control Malfunction
	P0450	EVAP Control System Pressure Sensor Malfunction
	P0455	EVAP Control System, Large Leak Detected
	P0500	VSS Malfunction
	P0505	IAC Motor Circuit Malfunction
	P0510	Closed TPS Switch Malfunction
	P0551	PSP Sensor Circuit
	P0600	PCM Failure or CCD/PCM Communication
	P0601	Internal Controller Failure
	P0604	ICM RAM Checksum Failure
	P0605	ICM ROM Checksum Failure
	P0700	Transmission DTC ICM (Watchdog Circuit)
	P0705	TRS Sensor (PRNDL Input) Circuit Malfunction
	P0710	TFT Sensor Circuit Malfunction
	P0715	Speed Error: Input Speed Sensor Circuit
	P0720	Speed Error: Output speed Sensor Circuit
	P0725	Engine Speed Input Circuit Malfunction
	P0731	1st Gear, Incorrect Ratio
	P0732	2nd Gear, Incorrect Ratio
	P0733	3rd Gear, Incorrect Ratio
	P0734	4th Gear, Incorrect Ratio
	P0736	Reverse Gear, Incorrect Ratio
	P0740	TCC Lock Up Control, Out of Range
	P0750	Shift Solenoid A (Low Reverse) Malfunction
	P0755	Shift Solenoid B Malfunction
	P0760	Shift Solenoid C Malfunction
	P0765	Shift Solenoid D Malfunction
	P1100	Induction Control Motor Position Sensor, Circuit Malfunction

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1101	Traction Control Vacuum Solenoid Malfunction
	P1102	Traction Control Ventilation Solenoid Malfunction
	P1103	Turbo Waste Gate Actuator Malfunction
	P1104	Turbo Waste Gate Solenoid Malfunction
	P1105	Fuel Pressure Solenoid Malfunction
	P1294	Target Idle not Reached (+/- 200 RPM)
	P1295	No 5 Volt Signal to TPS
	P1296	No 5 Volt Signal to MAP Sensor
	P1297	No Change in MAP Sensor from Start to Run
	P1300	Ignition Timing Adjustment Circuit Malfunction
	P1390	Timing Belt Skipped 1 Tooth or More
	P1391	Intermittent Loss of CMP or CKP
	P1400	MDP Sensor Circuit Malfunction
	P1443	EVAP system Purge Control Valve 2, Circuit Malfunction
	P1486	EVAP Control System, Pinched Hose
	P1487	High Speed Radiator Fan Control Relay Circuit
	P1489	High Speed Condenser Fan Control Relay Circuit
	P1490	Low Speed Fan Control Relay Circuit Malfunction
	P1492	Battery Temp. Sensor, High Voltage
	P1493	Battery Temp. Sensor, Low Voltage
	P1494	EVAP Ventilation Solenoid Switch or Mechanical Fault
	P1495	EVAP Ventilation Solenoid Circuit
	P1496	5 Volt Output Supply Too Low
	P1500	Generator FR Terminal Circuit Malfunction
	P1600	Serial Communication Link Malfunction
	P1696	PCM Failure, EEPROM Write Denied
	P1697	PCM Failure, SRI Mile not stored
	P1698	No CCD Message from TCM
	P1715	Pulse Generator Assembly Malfunction
	P1738	Transmission Overheat High Temp. Operation Activated
	P1739	TCM Power-up While Vehicle Being Driven
	P1750	Transmission Solenoid Assembly Malfunction

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1765	TCM Sensed Volts on Pressure Switch When Unexpected
	P1767	EATX Relay Always ON, Contacts Closed
	P1768	EATX Relay Always OFF, Contacts Open
	P1770	Inadequate Element Volume: L/R
	P1771	Inadequate Element Volume: 2-4
	P1772	Inadequate Element Volume: OD
	P1775	Solenoid Switch Valve Latched in LU Position
	P1776	Solenoid Switch Valve Latched in LR Position
	P1781	OD Pressure Switch Circuit
	P1782	2-4 Pressure Switch Circuit
	P1784	L/R Pressure Switch Circuit
	P1787	OD Hydraulic Pressure Switch Circuit
	P1788	2-4 Hydraulic Pressure Switch Circuit
	P1789	OD/2-4 Hydraulic Pressure Switch Circuit
	P1790	Error After Shift, Check Speed Code Error
	P1791	Engine: ECT Input to TCM
	P1791	Transmission: Slip or no Pressure
	P1792	Battery Power was Disconnected Since Power Down
	P1793	TRD Link communication Error
	P1794	Speed Sensor Ground
	P1795	PCM: TPS Circuit
	P1795	ICM: Malfunction
	P1798	Worn Transmission Fluid, Shudder Detected with A/C Clutch
	P1799	Calculated Transmission Fluid Temp. in Use
	P1899	PNP Switch (Trans Range Switch) Failure

NISSAN

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1. VEHICLES AND SYSTEMS

Using the Asian cartridge, the following Nissan vehicles can be diagnosed.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1984						
200SX	1.8L I4 TURBO	CA18ET	EFI	2	ECU LED	NONE
200SX	2.0L	CA20E	EFI	2	ECU LED	NONE
300ZX	3.0L	VG30E	EFI	2	ECU LED	NONE
300ZX	3.0L V6 TURBO	VG30ET	EFI	2	ECU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1985						
200SX	1.8L I4 TURBO	CA18ET	EFI	2	ECU LED	NONE
200SX	2.0L I4	CA20E	EFI	2	ECU LED	NONE
300ZX	3.0L V6	VG30E	PFI	2	ECU LED	NONE
300ZX	3.0L V6 TURBO	VG30ET	PFI	2	ECU LED	NONE
MAXIMA	3.0L V6	VG30E	PFI	2	ECU LED	NONE
STANZA	2.0L I4	CA20E	EFI	2	ECU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1986						
200SX	1.8L I4 TURBO	CA18ET	EFI	2	ECU LED	NONE
200SX	2.0L I4	CA20E	EFI	2	ECU LED	NONE
300ZX	3.0L V6	VG30E	PFI	2	ECU LED	NONE
300ZX	3.0L V6 TURBO	VG30ET	PFI	2	ECU LED	NONE
MAXIMA	3.0L V6	VG30E	PFI	2	ECU LED	NONE
STANZA WGN	2.0L I4	CA20E	EFI	2	ECU LED	NONE
PICKUP D21 SERIES	2.4L I4	Z24I	EFI	2	ECU LED	NONE

MODEL (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
PICKUP D21 SERIES	3.0L V6	VG30I	EFI	2	ECU LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1987						
200SX	1.8L I4 TURBO	CA18ET	EFI	5	ECU LED	CHECK
200SX	2.0L I4	CA20E	EFI	5	ECU LED	CHECK
200SX	3.0L V6	VG30E	EFI	5	ECU LED	CHECK
300ZX	3.0, 3.0L V6 TURBO	VG30E VG30ET	EFI	5	ECU LED	CHECK
MAXIMA	3.0L V6	VG30E	EFI	5	ECU LED	CHECK
PULSAR NX	1.6L I4	E16I	EFI	5	ECU LED	CHECK
PULSAR NX	1.6L I4	CA16DE	EFI	5	ECU LED	CHECK
SENTRA	1.6L I4	E16I	EFI	5	ECU LED	CHECK
STANZA	2.0L I4	CA20E	EFI	5	ECU LED	CHECK
VAN	2.4L I4	Z24I	TBI	5	ECU LED	CHECK
PATHFINDER	2.4L I4	Z24I	TBI	5	ECU LED	CHECK
TRUCK	2.4L I4	Z24I	TBI	5	ECU LED	CHECK
PATHFINDER	3.0L V6	VG30I	TBI	5	ECU LED	CHECK
TRUCK	3.0L V6	VG30I	TBI	5	ECU LED	CHECK

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1988						
200SX	1.8L I4 TURBO	CA18ET	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
200SX	2.0L I4	CA20E	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
200SX	3.0L V6	VG30E	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
300ZX	3.0, 3.0L V6 TURBO	VG30E VG30ET	EFI	5	CA: MIL/LED FED: ECU LED	CHECK

MODEL (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
MAXIMA	3.0L V6	VG30E	EFI	5	MIL/LED	CHECK
PULSAR NX	1.8L I4	CA18DE	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
SENTRA	1.6L I4	E16I	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
STANZA	2.0L I4	CA20E	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
VAN	2.4L I4	Z24I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
PATHFINDER	2.4L I4	Z24I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
TRUCK	2.4L I4	Z24I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
PATHFINDER	3.0L V6	VG30I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
TRUCK	3.0L V6	VG30I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1989						
240SX	2.4L I4	KA24E	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
300ZX	3.0, 3.0L V6 TURBO	VG30E VG30ET	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
MAXIMA	3.0L V6	VG30E	EFI	5	MIL/LED	CHECK
PULSAR NX	1.6L I4	GA16I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
PULSAR NX	1.8L I4	CA18DE	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
SENTRA	1.6L I4	GA16I	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
STANZA	2.0L I4	CA20E	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
VAN	2.4L I4	Z24I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
PATHFINDER	2.4L I4	Z24I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK

MODEL (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
TRUCK	2.4L I4	Z24I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
PATHFINDER	3.0L V6	VG30I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
TRUCK	3.0L V6	VG30I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1990						
240SX	2.4L I4	KA24E	EFI	5	CA: MIL/LED FED: ECU LED	CHECK
300ZX	3.0L V6	VG30DE	EFI	2	MIL/LED	NONE
MAXIMA	3.0L V6	VG30E	EFI	5	MIL/LED	CHECK
PULSAR NX	1.6L I4	GA16I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
SENTRA	1.6L I4	GA16I	TBI	5	CA: MIL/LED FED: ECU LED	CHECK
STANZA	2.4L I4	KA24E	EFI	2	CA: MIL/LED FED: ECU LED	NONE
AXXESS	2.4L I4	KA24E	MPFI	5	CA: MIL/LED FED: ECU LED	CHECK
PATHFINDER/ TRUCK	2.4L I4	KA24E	MPFI	5	CA: MIL/LED FED: ECU LED	CHECK
PATHFINDER/ TRUCK	3.0L V6	VG30E	MPFI	5	MIL/LED	CHECK

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1991						
240SX	2.4L I4	KA24E	EFI	2	MIL/LED	NONE
300ZX	3.O, 3.0L V6 TURBO	VG30DE VG30DETT	EFI	2	MIL/LED	NONE
MAXIMA	3.0L V6	VG30E	EFI	5	MIL/LED	CHECK
SENTRA	1.6, 2.0L I4	GA16DE, SR20DE	EFI	2	MIL/LED	NONE

MODEL (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
NX COUPE	1.6, 2.0L I4	GA16DE, SR20DE	EFI	2	MIL/LED	NONE
STANZA	2.4L I4	KA24E	EFI	2	MIL/LED	NONE
PATHFINDER	2.4L I4	KA24E	MPFI	5	MIL/LED	CHECK
TRUCK	2.4L I4	KA24E	MPFI	5	MIL/LED	CHECK
PATHFINDER	3.0L V6	VG30E	MPFI	5	MIL/LED	CHECK
TRUCK	3.0L V6	VG30E	MPFI	5	MIL/LED	CHECK

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1992						
240SX	2.4L I4	KA24DE	SFI	2	MIL/LED	NONE
300ZX	3.0, 3.0L V6 TURBO	VG30DE VG30DETT	SFI	2	MIL/LED	NONE
MAXIMA	3.0L V6	VG30E	SFI	5	MIL/LED	CHECK
MAXIMA	3.0L V6	VE30DE	SFI	2	MIL/LED	NONE
SENTRA	2.0L I4	SR20DE	SFI	2	MIL/LED	NONE
SENTRA	1.6L I4	GA16DE	SFI	2	MIL/LED	NONE
PATHFINDER/ PICKUP	3.0L V6	VG30E	MFI	5	MIL/LED	CHECK
PATHFINDER/ PICKUP	2.4L I4	KA24E	MFI	5	MIL/LED	CHECK
NX COUPE	2.0L I4	SR20DE	SFI	2	MIL/LED	NONE
NX COUPE	1.6L I4	GA16DE	SFI	2	MIL/LED	NONE
STANZA	2.4L I4	KA24E	SFI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1993						
240SX	2.4 I4	KA24DE	SFI	2	MIL/LED	NONE
300ZX	3.0, 3.0L V6 TURBO	VG30DE VG30DETT	SFI	2	MIL/LED	NONE
ALTIMA	2.4L I4	KA24DE	SFI	2	MIL/LED	NONE

MODEL (CONTINUED)	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
MAXIMA	3.0L V6	VG30E	SFI	5	MIL/LED	NONE
MAXIMA	3.0L V6	VE30DE	SFI	2	MIL/LED	CHECK
NX COUPE	2.0L I4	SR20DE	SFI	2	MIL/LED	NONE
NX COUPE	1.6L I4	GA16DE	SFI	2	MIL/LED	NONE
PATHFINDER/ TRUCK	3.0L V6	VG30E	MFI	5	MIL/LED	CHECK
TRUCK	2.4L I4	KA24E	MFI	5	MIL/LED	CHECK
QUEST	3.0L V6	VG30E	SFI	2	MIL/LED	JUMPER
SENTRA	2.0L I4	SR20DE	SFI	2	MIL/LED	NONE
SENTRA	1.6L I4	GA16DE	SFI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1994						
240SX	2.4 I4	KA24DE	SFI	2	MIL/LED	NONE
300ZX	3.0, 3.0L V6 TURBO	VG30DE VG30DETT	SFI	2	MIL/LED	NONE
ALTIMA	2.4L I4	KA24DE	SFI	2	MIL/LED	NONE
MAXIMA	3.0L V6	VG30E	SFI	5	MIL/LED	CHECK
MAXIMA	3.0L V6	VE30DE	SFI	2	MIL/LED	NONE
PATHFINDER/ TRUCK	3.0L V6	VG30E	SFI	5	MIL/LED	CHECK
TRUCK	2.4L I4	KA24E	SFI	5	MIL/LED	CHECK
QUEST	3.0L V6	VG30E	SFI	2	MIL/LED	JUMPER
NX COUPE	1.6L I4	GA16DE	SFI	2	MIL/LED	NONE
SENTRA	2.0L I4	SR20DE	SFI	2	MIL/LED	NONE
SENTRA	1.6L I4	GA16DE	SFI	2	MIL/LED	NONE

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1995						
240SX	2.4L I4	KA24DE	EGI	N/A	AUTOCODES	OBD II*
300ZX	3.0L V6	VG30DE	MPFI	2	MIL/LED	NONE
300ZX TURBO	3.0L V6	VG30DETT	MPFI	2	MIL/LED	NONE
STANZA/ ALTIMA	2.4L I4	KA24DE	MPFI	N/A	AUTOCODES	OBD II*
MAXIMA	3.0L V6	VQ30DE	MPFI	N/A	AUTOCODES	OBD II*
PATHFINDER/ TRUCK	3.0L V6	VG30E	MPFI	3	LED	NONE
TRUCK	2.4L I4	KA24DE	MPFI	3	LED	NONE
QUEST	3.0L V6	VG30E	SFI	N/A	MIL	NONE
SENTRA/ 200SX	2.0L I4	SR20DE	MPFI	N/A	AUTOCODES	OBD II*
SENTRA/ 200SX	1.6L I4	GA16DE	MPFI	N/A	AUTOCODES	OBD II*

* For Adapter Type OBD II see Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1996						
SENTRA/ 200SX	1.6L I4	GA16DE	MPFI	N/A	AUTOCODES	OBD II*
240SX	2.4L I4	KA24DE	EGI	N/A	AUTOCODES	OBD II*
300ZX	3.0L V6	VG30DE	MPFI	N/A	AUTOCODES	OBD II*
300ZX TURBO	3.0L V6	VG30DETT	MPFI	N/A	AUTOCODES	OBD II*
STANZA/ ALTIMA	2.4L I4	KA24DE	MPFI	N/A	AUTOCODES	OBD II*
MAXIMA	3.0L V6	VQ30DE	MPFI	N/A	AUTOCODES	OBD II*
PATHFINDER	3.0L V6	VG33E	MPFI	N/A	AUTOCODES	OBD II*
QUEST	3.0L V6	VG30E	SFI	N/A	AUTOCODES	OBD II*
TRUCK	2.4L I4	KA24E	MPFI	N/A	AUTOCODES	OBD II*

* For Adapter Type OBD II see Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1997						
SENTRA/ 200SX	1.6L I4	GA16DE	MPFI	N/A	AUTOCODES	OBD II*
SENTRA/ 200SX	2.0L I4	SR20DE	MPFI	N/A	AUTOCODES	OBD II*
240SX	2.4L I4	KA24DE	MPFI	N/A	AUTOCODES	OBD II*
ALTIMA	2.4L I4	KA24DE	MPFI	N/A	AUTOCODES	OBD II*
MAXIMA	3.0L V6	VQ30DE	MPFI	N/A	AUTOCODES	OBD II*
PATHFINDER	3.3L V6	VG33E	MPFI	N/A	AUTOCODES	OBD II*
QUEST	3.0L V6	VG30E	MPFI	N/A	AUTOCODES	OBD II*
TRUCK	2.4L I4	KA24E	MPFI	N/A	AUTOCODES	OBD II*

* For Adapter Type OBD II see Common Test Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	ENGINE TYPE	FUEL TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1998						
SENTRA/ 200SX	1.6L I4	GA16DE	MPFI	N/A	AUTOCODES	OBD II*
SENTRA/ 200SX	2.0L I4	SR20DE	MPFI	N/A	AUTOCODES	OBD II*
240SX	2.4L I4	KA24DE	MPFI	N/A	AUTOCODES	OBD II*
ALTIMA	2.4L I4	KA24DE	MPFI	N/A	AUTOCODES	OBD II*
MAXIMA	3.0L V6	VQ30DE	MPFI	N/A	AUTOCODES	OBD II*
PATHFINDER	3.3L V6	VG33E	MPFI	N/A	AUTOCODES	OBD II*
QUEST	3.0L V6	VG30E	MPFI	N/A	AUTOCODES	OBD II*
FRONTIER	2.4L I4	KA24DE	MPFI	N/A	AUTOCODES	OBD II*

* For Adapter Type OBD II see Common Test Modes OBD II Systems section for operating instructions and test mode information.

2. NISSAN SPECIFIC INFORMATION

The Nissan vehicles covered by the Asian Imports Cartridge are separated into two different sections within the Asian Imports Operator's Manual. The vehicle's on-board system will determine which section of the Operator's Manual will need to be used. Vehicles that are OBD II certified have information about the operating test modes in the Common Test Modes OBD II Systems section of the Operator's Manual. Vehicles that have OBD or OBD I systems have test mode information in this section of the Operator's Manual. In these sections, you will find information on test modes available, how to connect the tester to the vehicle, and operating instructions for the different test modes. A complete list of Nissan Diagnostic Trouble Codes is included at the back of each section.

To determine which section of the Operator's Manual to use for diagnostic information and instructions, look at Adapter Type of the Vehicle and Systems chart. If the vehicle you are testing has an OBD II adapter type, use the Common Test Modes OBD II Systems section of the Operator's Manual. If the vehicle you are testing does not have the OBD II Adapter Type, use this section to diagnose the vehicle under test.

3. TEST MODES AVAILABLE

The following test modes are available when testing Nissan vehicles. Operating instructions for test modes other than DTC ENTRY, DTCs and OBD Controls are included in Common Test Modes OBD, OBD I Systems section. There are also Nissan specific instructions for operating the test modes in *TEST MODES* on page 15. A description and operating instructions for each Output Test is included in *OBD CONTROLS* on page 22.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F2: DTC

SUBMODE F1: READ DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F4: OBD CONTROLS

SUBMODE F0: AFR MONITOR A
SUBMODE F1: AFR MONITOR B
SUBMODE F2: SWITCH TEST
SUBMODE F3: RT DTC MONITOR

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

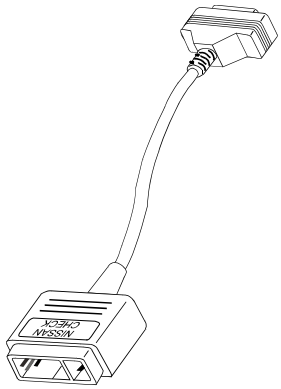
SUBMODE F1: DLC LOCATION*
SUBMODE F3: ID INFO
SUBMODE F4: DJC LOCATION*
SUBMODE F5: ECU LOCATION*

* Note that not all models support ECU, DJC, or DLC Location Test modes. The tester will automatically choose which test mode to display, depending on your vehicle selection.

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Nissan vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Refer to the Vehicle and Systems table to see if the vehicle you are testing requires the Check Adapter Cable. If so, connect the Nissan Check Adapter Cable to the end of the DLC cable, then connect the red connector end to the vehicle Check connector.



Nissan Check Adapter Cable

3. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery clip adapter (P/N 02001636).

NOTE	Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery clip adapter.

4. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester Stand-Alone Display

5. If the display is correct, press ENTER. If the display is not correct, refer to *IF YOU'RE HAVING A PROBLEM* on page 7 of *APPENDICES*.
6. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

NOTE	When removing the Nissan Check Adapter Cable from the vehicle DLC, remember to depress the retaining tab on the vehicle DLC. Failure to do so could cause wiring harness damage.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite Nissan.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the model year being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE AND ENGINE TYPE

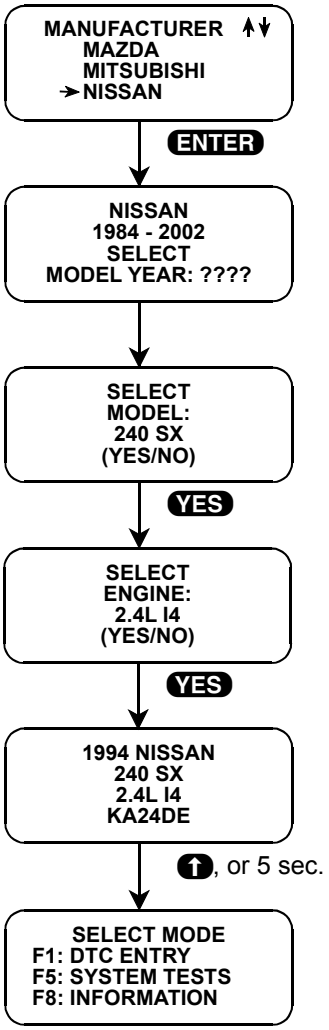
Next, the Engine Select menu is displayed. For Maxima vehicles you will also be asked to select the engine type, such as VE30DE. Press NO until the engine and engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the preceding steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to *TEST MODES* on page 15, *OBD CONTROLS* on page 22, and the Common Test Modes OBD, OBD I Systems section for instructions on operating the test modes with Nissan vehicles.



Nissan Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
EXIT	Return to previous display.

6. TEST MODES

When the Select Mode menu is displayed, test modes available for Nissan vehicles may be selected.

Operating instructions for test modes other than DTC ENTRY, DTCs, and OBD Controls are included in Common Test Modes OBD, OBD I Systems section. You may select these modes without connecting the tester to the vehicle.

READING CODES

Detailed operating instructions for using Modes F1: DTC Entry and F2: DTC with Nissan vehicles are included in the following procedures. Remember that F1: DTC Entry is automatically displayed with Nissan vehicles that have “NONE” as the adapter type listed in the Vehicles and Systems table, and F2: DTC is automatically displayed with Nissan vehicles that have “CHECK” as the adapter type listed in the Vehicles and Systems table.

Operating instructions for Mode F4: OBD Controls are included in *OBD CONTROLS* on page 22.

NOTE

Before testing, perform the System Test Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

MODE F1: DTC ENTRY

When Mode F1: DTC Entry is selected, the tester displays submodes which can provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory buffer), how to obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

DTC ENTRY SUBMODES

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Manually Reading DTCs

To read DTCs on all 1984-86 and select 1990-95 Nissan vehicles you must locate the ECU and observe the flashing LEDs. If you do not know where the ECU is located, select Mode F5: ECU location from the Information menu. If necessary, refer to Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the ECU, the tester can define the code. A complete list of Nissan DTCs is included in *NISSAN DIAGNOSTIC TROUBLE CODES (DTCs)* on page 28.

Note that manually retrieving DTCs from the 1993-95 Nissan Quest requires you to locate, disconnect, and jumper the Diagnostic Connector. In this manual, the Diagnostic Connector is referred to as the Diagnostic

Jumper Connector (DJC). Refer to the section on manually reading DTCs from the 1993-95 Nissan Quest in Mode F1, Submode F1.

Submode F0: How To Read

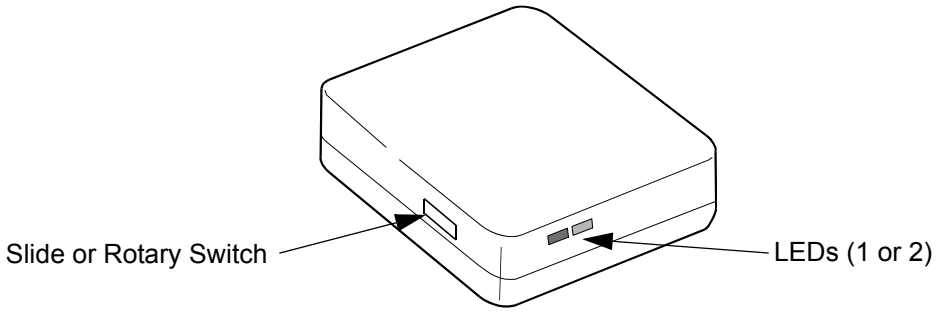
This submode provides information on how to manually read DTCs from the vehicle. Step-by-step screen instructions provide information to correctly set up the vehicle ECU. An example is provided in Common Test Modes section. If you have trouble, additional DTC retrieval information is described below. If you refer to the shop manual for this information, make sure that you are following the correct steps for the system that you are working on.

Submode F1: Enter DTC(s)

On Nissan vehicles, the Enter DTCs submode allows you to manually read DTCs. This submode provides you with a text description of the numeric DTC that was entered into the tester.

The Enter DTC Submode displays two question marks for DTC Entry. The tester screen prompts you to enter the DTCs read from the ECU LED(s) or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the ECU LED(s) or MIL. Incorrect ECU LED or MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in Common Test Modes OBD, OBD I Systems section.

Refer to the appropriate procedure on the following pages for manually reading ECU LED DTCs.



Typical ECU

To Manually Read DTCs from 1984-86 Nissan ECUs with the 2 LED System, do the following:

Non-turbocharged models:

1. Verify that the diagnostic mode selector is turned fully counterclockwise or diagnostic slide switch is in the OFF position.
2. Turn ignition switch to ON.
3. Check for LED lamp illumination on ECU (bulb check).
4. Turn the diagnostic mode selector fully clockwise or change the diagnostic slide switch to the ON position.
5. Observe the ECU LEDs for DTCs 23 and 31. The presence of these DTCs indicates that the ECU has not received input switch signals from the Accelerator and A/C and/or heater switch.
6. Depress and release accelerator pedal.

7. Observe the ECU LEDs for DTC 31. The presence of DTC 31 indicates that the ECU has not received an input switch signal from the A/C and/or heater switch.
8. If the vehicle has factory air conditioning, cycle the air conditioning/heater fan switch OFF, ON, OFF.
9. Observe the ECU LEDs for DTC 44. The presence of this DTC indicates that the ECU has not detected conditions to set a DTC and is not currently storing any DTCs.
10. Turn diagnostic mode selector fully counterclockwise or change the diagnostic slide switch to the OFF position, and turn the engine off.
11. If the ECU outputs any other DTCs than DTC 44, refer to factory service manuals for DTC decoding and diagnostics.

Turbocharged models:

1. Verify that the diagnostic mode selector is turned fully counterclockwise or diagnostic slide switch is in the OFF position.
2. Turn ignition switch to ON.
3. Check for LED lamp illumination on ECU (bulb check).
4. Turn the diagnostic mode selector fully clockwise or change the diagnostic slide switch into the ON position.
5. Observe the ECU LEDs for DTCs 23, 24, and 31. The presence of these DTCs indicates that the ECU has not received input switch signals from the Accelerator, Park/Neutral, and A/C and/or heater switch.
6. Depress and release accelerator pedal.
7. Observe the ECU LEDs for DTCs 24 and 31. The presence of these DTCs indicates that the ECU has not received input switch signals from the Park/Neutral and A/C and/or heater switch.
8. Shift automatic transmission from neutral through drive gears and back to neutral, or shift manual transmission from neutral to all gear selections and back to neutral.
9. Observe the ECU LEDs for DTC 31. The presence of this DTC indicates that the ECU has not received an input switch signal, from the A/C and/or heater switch.
10. Start the engine.
11. Observe the ECU LEDs for DTCs 14 and 31. The presence of these DTCs indicates that the ECU has not received input switch signals from the vehicle speed and A/C and/or heater switch.
12. Drive the vehicle above 6 MPH.
13. Observe the ECU LEDs for DTC 31. The presence of this DTC indicates that the ECU has not received an input switch signal from the A/C and/or heater switch.
14. If the vehicle has factory air conditioning, cycle the air conditioner switch and heater fan switch OFF, ON, OFF.
15. Observe the ECU LEDs for DTC 44. The presence of this DTC indicates that the ECU has not detected conditions to set a DTC and is not currently storing any DO’s.
16. Turn diagnostic mode selector fully counterclockwise or change the diagnostic slide switch to the OFF position, and turn off the engine.

NOTE

If the ECU has output any other DTCs than DTC 44, refer to factory service manuals for DTC decoding and diagnostics.

To manually read DTCs from all 1987-89 and select 1990-95 Nissan ECUs with the 2-LED, 5-mode system, do the following:

> **NOTE**
>
>
>
> This procedure is for reference only. Use Mode F1: Read DTC(s) to let the tester retrieve DTCs.

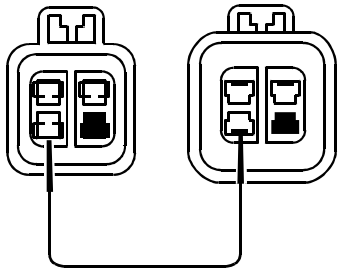
1. Locate the vehicle ECU.
2. Turn the ignition key to run (note ECU LEDs; they should light briefly for a bulb check).
3. Turn the diagnostic mode selector fully clockwise or change the diagnostic slide switch to the ON position.
4. Observe the ECU LEDs; when the LEDs flash three consecutive times, turn diagnostic mode selector fully counterclockwise or change the diagnostic slide switch to the OFF position.
5. Read the 2-digit DTCs from the ECU LEDs. Note that the RED LED is the 10's digit and the GREEN LED is the 1's digit.
6. Write down all received DTCs. The DTCs will be reported once, so if they are missed then the procedure must be repeated. Depending on the model year, DTC 44 or 55 indicates a pass DTC.
7. Turn ignition key off.

To manually read DTCs from 1991-95 Nissan ECHO's with the 1-LED, 2-mode system, do the following:

1. Use Mode F5: ECU Location from the Information menu, to locate the vehicle ECU.
2. Turn the ignition key to ON (ECU LED and MIL should illuminate briefly for a bulb check).
3. Turn the rotary diagnostic mode selector fully clockwise, or change the diagnostic slide switch to the ON position.
4. Wait at least 2 seconds.
5. Turn the rotary diagnostic mode selector fully counterclockwise, or push the slide switch back to the original position.
6. Count the flashes on the ECU LED or MIL. Long flashes are the 10's digit and short flashes are the 1's digit.
7. Write down all received DTCs. The DTCs will be reported once, so if they are missed then the procedure must be repeated. DTC 44 or 55 indicates a pass DTC.
8. Turn ignition key OFF.

To manually read DTCs from 1993-95 Nissan Quest 3.0L, do the following:

1. Locate the Diagnostic Jumper Connector (under hood, below MAF sensor, on bracket bolted to transaxle).
2. Turn the ignition key to ON.
3. Disconnect the Diagnostic Jumper Connector (DJC).
4. Referring to the illustration, use the Nissan jumper wire (P/N 02002075) to short the Blue/White wire and Grey/Blue wire between the DJC halves.



Diagnostic Jumper Connector

5. Wait 2 seconds.
6. Disconnect the jumper wire and reconnect the DJC.
7. Record the DTCs by reading the flashing dashboard MIL.

To manually clear DTCs from 1993-95 Nissan Quest 3.0L, do the following:

1. Perform the manually reading DTCs function.
2. Referring to the illustration, use the Nissan jumper wire (P/N 02002075) to short the Blue/White wire and Grey/Blue wire between the DJC halves.
3. Wait 2 seconds.
4. Disconnect the jumper wire and reconnect the DJC.
5. The MIL will illuminate constantly, indicating the DTCs have been erased.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the ECU LED or MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the ECU LED. You can “Select” the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC(s)

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to chose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory of DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

MODE F2: DTC

To read DTCs on all 1987-89 and select 1990-95 Nissan vehicles you will need to locate the vehicle DLC and connect the Nissan Check Adapter to the tester and vehicle.

To locate the DLC, select F1: DLC Location from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

When Mode F2: DTC is selected, the tester displays four submodes:

DTC SUBMODES

F1: READ DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Submode F1: Read DTC(s)

This submode is available for all 1987-89 and select 1990-95 Nissan vehicles. If you are unsure of the Read DTC test application, check the ECU Modes column in the Nissan Vehicle Coverage table (found at the beginning of this section). If the ECU Modes column indicates “5 Modes”, then the vehicle supports F1: READ DTC(s).

This submode provides automated DTC retrieval from the vehicle ECU. Step-by-step screen instructions guide you to connect the RED Nissan Check adapter to the vehicle DLC and start and warm the engine to normal operating temperature. This is performed by following the tester instruction screens. If you have trouble, additional F1: READ DTC(s) retrieval information is described below.

NOTE

When reading DTCs from Nissan vehicles make sure the engine is at normal operating temperature and testing is performed in a well-ventilated area.

To read DTCs from all 1987-89 and select 1990-95 Nissan ECUs with the 2 LED, 5-mode system, do the following:

1. Insert Asian cartridge into MASTERTECH or TECH 1A,
2. Connect Nissan Check adapter (Red) to DLC cable.
3. Connect the Check adapter to the vehicle DLC. Press F1: DLC location from the Information menu for Data Link Connector location assistance.
4. Power MASTERTECH or TECH 1A with 12v power cable.
5. Select Nissan vehicle to test.
6. Turn ignition key to start the engine.
7. Press F2: DTCs from Nissan test mode menu.
8. Press F1: READ DTCs submode from DTC test menu.
9. Tester will automatically command the vehicle ECU into the correct mode required to read DTCs, and will display all received DTCs on the tester display.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions. You can also select the DTCs obtained from the ECU LED or MIL. as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the ECU LED. You can “Select” the DTC on the tester screen for later review or printing. Refer to Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides you with a review of the DTCs that you entered or selected in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to choose. Option 1 is an automated function during which the tester clears DTCs from the vehicle ECU memory. This is performed by tester keypad presses. Option 2 clears the tester memory of DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

NOTE

Follow the Submode F0: Prepare Vehicle instructions to ensure proper vehicle preparation prior to testing. The vehicle must be completely warmed up in order for the tester to communicate properly with the vehicle.

7. OBD CONTROLS

The OBD Controls mode is used to select a submenu of output tests applicable to Nissan vehicles. Pressing F4 from the Select Mode menu displays a list of tests available. To return to the Select Mode menu, press EXIT.

Once you have selected the test mode, operation begins. Detailed operating instructions for each output control test are on the following pages.

There are descriptions of four output tests available in the Nissan specific section. Each OBD Control test can provide you with enhanced diagnostic information which will help to pinpoint Air-Fuel Ratio (AFR) problems, ECU switch input problems, and real time diagnostic trouble code monitoring for intermittent component failure.

F0: AFR MONITOR A

Monitors engine control system open/closed loop operation and exhaust emission rich/lean status.

F1: AFR MONITOR B

Monitors engine control system open/closed loop operation with indication of AFR greater than 5% lean, greater than 5% rich, or between 5% lean and 5% rich.

F2: SWITCH TEST

Monitors ECU idle, starter, and vehicle speed switch input.

F3: RT DTC MONITOR

Real Time Diagnostic Trouble Code monitors intermittent crank signal, ignition primary, and air flow meter component.

MODE F4: OBD CONTROLS

Submode F0: AFR Monitor A

The AFR Monitor A miscellaneous test is available for all 1987-89 and select 1990-95 Nissan vehicles. If you are unsure of test application, check the ECU Modes column in the Nissan Vehicles and Systems table. If the ECU Modes column indicates “5 Modes”, then the vehicle supports AFR Monitor A.

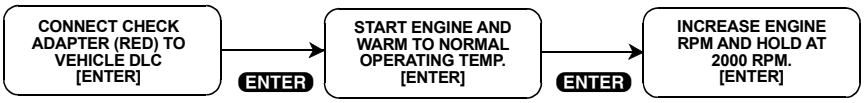
The AFR Monitor A test monitors and displays the ECU loop status and exhaust emission Rich/Lean content. The loop status can either be Open or Closed, depending on the commanded ECU state. And exhaust emission content can be Rich or Lean, depending on the level of oxygen present in exhaust emissions, which is detected by the oxygen sensor. Since this test monitors the operation of the green LED on the ECU, you can determine the operation of the green LED without locating and watching the ECU mounted LED. This test can help you to determine faulty fuel and emission system components in the service bay or on a road test.

NOTE

When performing the AFR Monitor A test, make sure the vehicle is properly warmed up and is tested in a well-ventilated area.

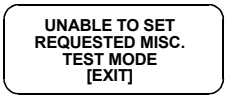
To perform the AFR Monitor A test, do the following:

1. Press F0 to select AFR Monitor A from the OBD Controls menu.
2. The tester displays instructions for preparing the vehicle to perform the test. Press ENTER when the instructions on each screen have been completed.


CONNECT CHECK ADAPTER (RED) TO VEHICLE DLC [ENTER]
ENTER
START ENGINE AND WARM TO NORMAL OPERATING TEMP. [ENTER]
ENTER
INCREASE ENGINE RPM AND HOLD AT 2000 RPM. [ENTER]

3. When the preparations are complete the tester displays the status of the test. Press EXIT to return to the OBD Controls menu.

4. If the tester is unable to set the ECU to the selected mode, the following screen is displayed. Press EXIT to return to the OBD Controls menu.



ACTIVE KEYS	
F0	Select test.
ENTER	Used when instructions on each screen have been completed.
EXIT	Return to OBD Controls menu.

Submode F1: AFR Monitor B

The AFR Monitor B miscellaneous test is available for all 1987-89 and select 1990-95 Nissan vehicles. If you are unsure of test application, check the ECU Modes column in the Nissan Vehicles and Systems table. If the ECU Modes column indicates “5 Modes”, then the vehicle supports AFR Monitor B.

The AFR Monitor B test monitors and displays the ECU loop status and the percent AFR mixture Rich/Lean content of the exhaust emissions. The loop status can either be Open or Closed, depending on the commanded ECU state. And the AFR Monitor B gives you information about the percent Lean or Rich of engine exhaust emissions. If the oxygen sensor detects exhaust emissions to be more than 5% lean of normal (normal being 14.7:1, the stoichiometric equivalent of 14.7 parts of air to 1 part of fuel, which is the ideal

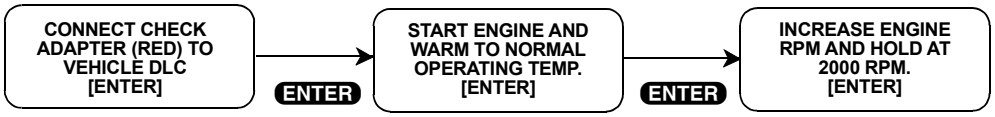
air-fuel ratio), more than 5% Rich of normal, or between 5% lean and 5% rich of normal, then the tester will display an indication of the detected exhaust emission condition.

NOTE

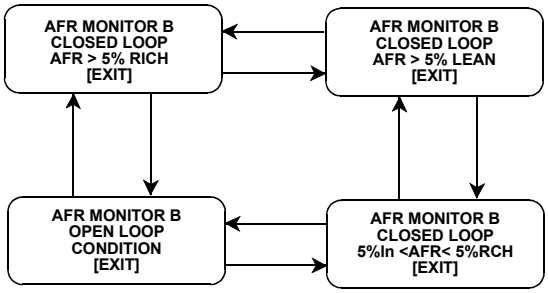
When performing the AFR Monitor B test, make sure the vehicle is properly warmed up and is tested in a well-ventilated area.

To perform the AFR Monitor B test, do the following:

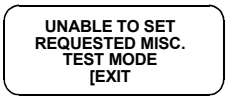
1. Press F1 to select AFR Monitor B from the OBD Controls Tests menu.
2. The tester displays instructions for preparing the vehicle to perform the test. Press ENTER when the instructions on each screen have been completed.


CONNECT CHECK ADAPTER (RED) TO VEHICLE DLC [ENTER]
ENTER
START ENGINE AND WARM TO NORMAL OPERATING TEMP. [ENTER]
ENTER
INCREASE ENGINE RPM AND HOLD AT 2000 RPM. [ENTER]

3. When the preparations are complete the tester displays the status of the test. Press EXIT to return to the OBD Controls menu.


AFR MONITOR B CLOSED LOOP AFR > 5% RICH [EXIT]
AFR MONITOR B CLOSED LOOP AFR > 5% LEAN [EXIT]
AFR MONITOR B OPEN LOOP CONDITION [EXIT]
AFR MONITOR B CLOSED LOOP 5%In <AFR< 5%RCH [EXIT]

4. If the tester is unable to set the ECU to the selected mode, the following screen is displayed. Press EXIT to return to the OBD Controls menu.



ACTIVE KEYS	
F1	Select test.
ENTER	Used when instructions on each screen have been completed.
EXIT	Return to OBD Controls menu.

Submode F2: Switch Test

The Switch Test is available for all 1987-89 and select 1990-95 Nissan vehicles. If you are unsure of test application, check the ECU Modes column in the Nissan Vehicle and Systems table. If the ECU Modes column indicates “5 Modes”, then the vehicle supports Switch Test.

The Switch Test provides you with a guided procedure which tests the condition of the switched inputs to the ECU. The components that are tested are the idle switch (located in the TPS on some vehicles), starter switch (the crank signal from the ignition switch while in the crank position), and the vehicle speed switch (which indicates a speed of greater than 12MPH when the vehicle speed sensor contacts close). If, while performing the Switch test, the tester detects a fault with either switched input, it will display a message about which circuit to check. Or if the test is completed and the tester does not detect a failure, a pass message will be displayed.

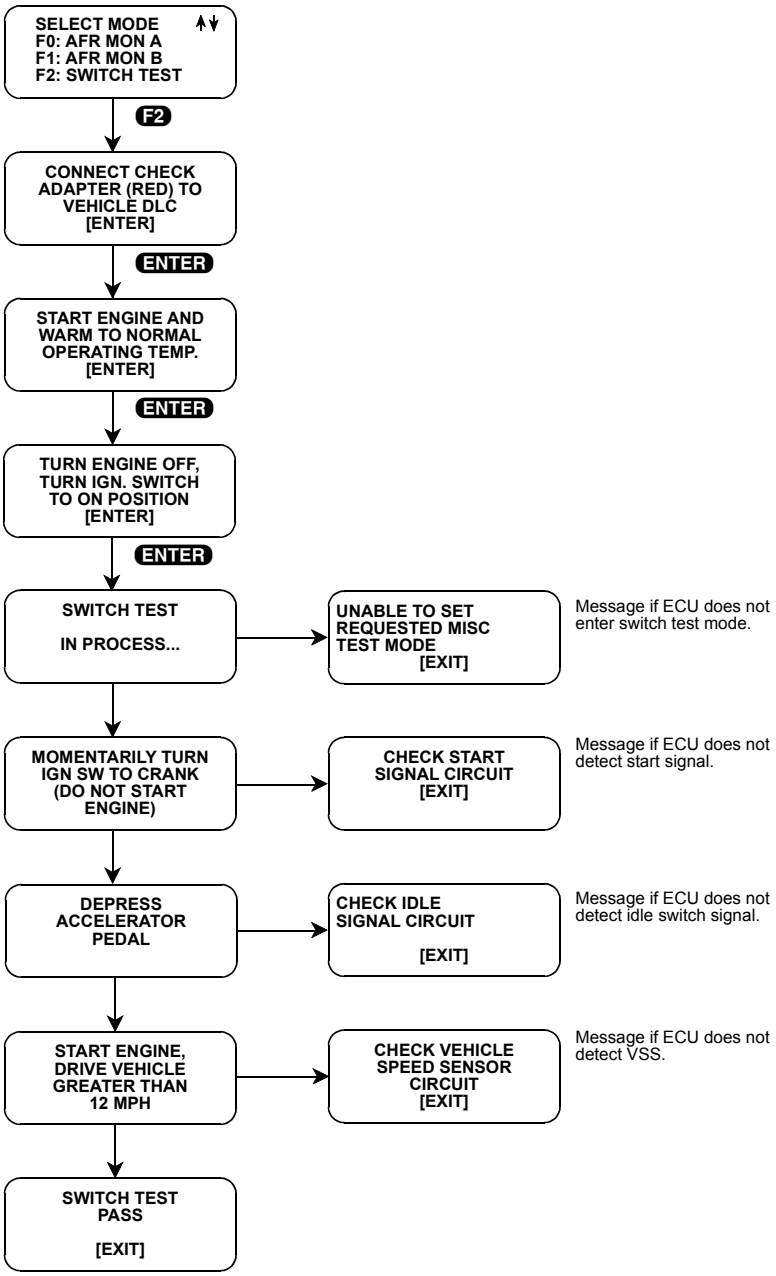
NOTE

When performing the Switch Test, make sure the vehicle is properly warmed up and is tested in a well-ventilated area.

To perform the Switch Test, do the following:

1. Press F2 to select Switch Test from the OBD Controls menu.
2. The tester displays instructions for performing the Switch Test. Press ENTER when each step has been completed.
3. Follow the instructions on the tester display. When each instruction is completed, the tester indicates if further action is necessary. If a problem is detected, press EXIT to return to the OBD Controls menu.
4. The tester informs you if the switch passes the test. Press EXIT to return to the OBD Controls menu.
5. If the tester is unable to set the ECU to the selected mode, the tester informs you. Press EXIT to return to the OBD Controls menu.

ACTIVE KEYS	
F2	Select test.
ENTER	Used when instructions on each screen have been completed.
EXIT	Return to OBD Controls menu.


SELECT MODE
F0: AFR MON A
F1: AFR MON B
F2: SWITCH TEST
F2
CONNECT CHECK ADAPTER (RED) TO VEHICLE DLC [ENTER]
ENTER
START ENGINE AND WARM TO NORMAL OPERATING TEMP. [ENTER]
ENTER
TURN ENGINE OFF, TURN IGN. SWITCH TO ON POSITION [ENTER]
ENTER
SWITCH TEST
IN PROCESS...
UNABLE TO SET REQUESTED MISC TEST MODE [EXIT]
Message if ECU does not enter switch test mode.
MOMENTARILY TURN IGN SW TO CRANK (DO NOT START ENGINE)
CHECK START SIGNAL CIRCUIT [EXIT]
Message if ECU does not detect start signal.
DEPRESS ACCELERATOR PEDAL
CHECK IDLE SIGNAL CIRCUIT [EXIT]
Message if ECU does not detect idle switch signal.
START ENGINE, DRIVE VEHICLE GREATER THAN 12 MPH
CHECK VEHICLE SPEED SENSOR CIRCUIT [EXIT]
Message if ECU does not detect VSS.
SWITCH TEST PASS
[EXIT]

Switch Test

Submode F3: RT DTC Monitor

The Real Time (RT) DTC Monitor output control test is available for all 1987-89 and select 1990-95 Nissan vehicles. If you are unsure of test application, check the ECU Modes column in the Nissan Vehicles and Systems table. If the ECU Modes column indicates “5 Modes”, then the vehicle supports Real Time DTC Monitor.

The Real Time DTC Monitor provides you with a guided procedure which monitors the condition of the crankshaft angle sensor, ignition primary signal, and the air flow meter output signal. If any component intermittently fails, the vehicle ECU will output a real-time diagnostic trouble code. The tester monitors this operation and changes from OK to NG (not good), signaling the real-time detection of a faulty component.

In some cases, the detection of a real-time intermittent failure by the ECU will cause a DTC to be stored in ECU memory (do not confuse this with RT DTCs, as they cannot be stored into non- volatile ECU memory). After performing submode F3: RT DTC MONITOR, always check the ECU for DTCs using submode F1: READ DTC(s) in the F2: DTC test mode.

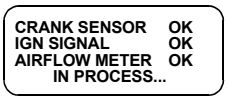
NOTE	When performing the Real Time DTC Monitor, make sure the vehicle is properly warmed up and is tested in a well-ventilated area. Also, driving the vehicle in this mode can be helpful in duplicating intermittent problem(s).

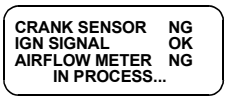
To perform the Real Time DTC Monitor test, do the following:

1. Press F3 to select RT DTC Monitor from the OBD Controls menu.
2. The tester displays instructions for preparing the vehicle to perform the test. Press ENTER when the instructions on each screen have been completed.

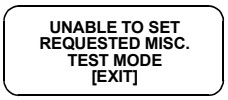
CONNECT CHECK ADAPTER (RED) TO VEHICLE DLC [ENTER]
ENTER
TURN IGNITION SWITCH TO ON POSITION [ENTER]
ENTER
To test results display

3. The tester displays the results of the test. OK is displayed if the sensor is functioning properly, or NG (Not Good) is displayed if a fault is detected. Examples are shown below.





4. Press EXIT to return to the OBD Controls menu.
5. If the tester is unable to set the ECU to the selected mode, the following screen is displayed. Press EXIT to return to the OBD Controls menu.



ACTIVE KEYS	
F3	Select test.
ENTER	Used when instructions on each screen have been completed.
EXIT	Return to OBD Controls menu.

8. NISSAN DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Nissan vehicles are listed in the following charts.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD, OBD I SYSTEMS

YEAR: 1984	DTC NO.	DESCRIPTOR
1984	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE CYL. HEAD TEMP SENSOR FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SWITCH OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	23	THROTTLE IDLE SWITCH FAILURE
	24	TRANS. SWITCH OR CIRCUIT FAILURE PARK/NEUTRAL SW. OR CKT FAILURE
	31	A/C OR A/C CIRCUIT FAILURE
	32	STARTER SIGNAL MALFUNCTION
	34	KNOCK SENSOR OR KS CKT FAILURE
	41	IAT SENSOR OR IAT CKT FAILURE FUEL TEMP SENSOR OR CKT FAILURE
	44	NO DTCs DETECTED BY ECU

YEAR: 1985	DTC NO.	DESCRIPTOR
1985	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE CYL. HEAD TEMP SENSOR FAILURE
	14	VSS OR VSS CIRCUIT FAILURE

YEAR: 1985 (CONTINUED)	DTC NO.	DESCRIPTOR
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	23	THROTTLE IDLE SWITCH FAILURE
	24	TRANS. SWITCH OR CIRCUIT FAILURE PARK/NEUTRAL SW. OR CKT FAILURE
	31	F.I.C.D SYSTEM MALFUNCTION LOAD SIGNAL OR CIRCUIT FAILURE A/C OR A/C CIRCUIT FAILURE
	32	STARTER SIGNAL MALFUNCTION
	34	KNOCK SENSOR OR KS CIRCUIT FAILURE
	41	IAT SENSOR OR IAT CKT FAILURE DISREGARD IF DISPLAYED FUEL TEMP SENSOR OR CKT FAILURE
	44	NO DTCs DETECTED BY ECU

YEAR: 1986	DTC NO.	DESCRIPTOR
1986	11	CKP SENSOR OR CKP CIRCUIT FAILURE
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE CYL. HEAD TEMP SENSOR FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	23	THROTTLE IDLE SWITCH FAILURE
	24	TRANS. SWITCH OR CIRCUIT FAILURE PARK/NEUTRAL SW. OR CKT FAILURE CLUTCH/NEUT. SW OR CKT FAILURE
	31	IDLE CONTROL CIRCUIT FAILURE F.I.C.D SYSTEM MALFUNCTION LOAD SIGNAL OR CIRCUIT FAILURE
	32	STARTER SIGNAL MALFUNCTION
	33	O2S OR O2S CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	41	IAT SENSOR OR IAT CKT FAILURE FUEL TEMP SENSOR OR CKT FAILURE

YEAR: 1986 (CONTINUED)	DTC NO.	DESCRIPTOR
	42	TP SENSOR OR TPS CKT FAILURE
	43	FUEL INJECTOR OR CKT FAILURE
	44	NO DTCs DETECTED BY ECU

YEAR: 1987	DTC NO.	DESCRIPTOR
1987	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE CYL. HEAD TEMP SENSOR FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE ERRATIC IDLE SPEED CONTROL
	23	THROTTLE IDLE SWITCH FAILURE
	31	A/C OR A/C CIRCUIT FAILURE
	32	STARTER SIGNAL MALFUNCTION
	33	O2S OR O2S CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE KS OR KS CKT FAILURE (VG30ET)
	41	IAT SENSOR OR IAT CKT FAILURE FUEL TEMP SENSOR OR CKT FAILURE
	42	TP SENSOR OR TPS CKT FAILURE
	43	ERRATIC MIXTURE RATIO CONTROL FUEL INJECTOR OR CKT FAILURE
	44	NO DTCs DETECTED BY ECU

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE CYL. HEAD TEMP SENSOR FAILURE
	14	VSS OR VSS CIRCUIT FAILURE

YEAR: 1988 (CONTINUED)	DTC NO.	DESCRIPTOR
	15	ERRATIC MIXTURE RATIO CONTROL
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	23	THROTTLE IDLE SWITCH FAILURE
	24	FULL THROTTLE SWITCH FAILURE
	25	ERRATIC IDLE SPEED CONTROL
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR CKT FAILURE (CA ONLY) EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE KS OR KS CKT FAILURE (VG30ET)
	35	EXHAUST GAS TEMP CKT (CA ONLY) EXHAUST GAS TEMP SENSOR CIRCUIT
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE TPS OR TPS CKT FAIL (CA ONLY) TP SENSOR OR TPS CKT FAILURE
	44	NO DTCs DETECTED BY ECU
	45	INJECTOR LEAK (CA ONLY) INJECTOR LEAK
	51	FUEL INJECTOR OR CKT FAILURE
	55	NO DTCs DETECTED BY ECU

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	13	CYL. HEAD TEMP SENSOR FAILURE ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE

YEAR: 1989 (CONTINUED)	DTC NO.	DESCRIPTOR
	23	THROTTLE IDLE SWITCH FAILURE
	24	FULL THROTTLE SWITCH FAILURE
	25	A.A.C. VALVE CIRCUIT FAILURE
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE
	34	KS OR KS CKT FAILURE (VG30ET) KNOCK SENSOR OR KS CKT FAILURE
	35	EXHAUST GAS TEMP SENSOR CIRCUIT
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK INJECTOR LEAK (CA ONLY)
	51	FUEL INJECTOR OR CKT FAILURE
	54	FAULTY A/T CONTROL UNIT
	55	NO DTCs DETECTED BY ECU

YEAR: 1990	DTC NO.	DESCRIPTOR
1990	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	23	THROTTLE IDLE SWITCH FAILURE
	25	A.A.C. VALVE CIRCUIT FAILURE
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE LEFT O2S OR CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE

YEAR: 1990 (CONTINUED)	DTC NO.	DESCRIPTOR
	35	EXHAUST GAS TEMP SENSOR CIRCUIT
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	51	FUEL INJECTOR OR CKT FAILURE
	53	RIGHT O2S OR CIRCUIT FAILURE
	54	TCM TO ECU CIRCUIT FAILURE FAULTY A/T CONTROL UNIT
	55	NO DTCs DETECTED BY ECU

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE LEFT O2S OR CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE KS OR KS CKT FAILURE (SR20DE)
	35	EXHAUST GAS TEMP SENSOR CIRCUIT
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	51	FUEL INJECTOR OR CKT FAILURE
	53	RIGHT O2S OR CIRCUIT FAILURE

YEAR: 1991 (CONTINUED)	DTC NO.	DESCRIPTOR
	54	TCM TO ECU CIRCUIT FAILURE FAULTY A/T CONTROL UNIT
	55	NO DTCs DETECTED BY ECU

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	AIR FLOW METER CIRCUIT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	31	FAULTY ECU OR ECU CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE LEFT O2S OR CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EXHAUST GAS TEMP SENSOR CIRCUIT
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	51	FUEL INJECTOR OR CKT FAILURE
	53	RIGHT O2S OR CIRCUIT FAILURE
	54	TCM TO ECU CIRCUIT FAILURE FAULTY A/T CONTROL UNIT
	55	NO DTCs DETECTED BY ECU

YEAR: 1993	DTC NO.	DESCRIPTOR
1993	11	CKP SENSOR OR CKP CIRCUIT FAIL
	12	MAF SENSOR OR MAF CKT FAILURE

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CKT FAILURE
	31	FAULTY ECM OR ECM CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE
	33	O2S OR O2S CIRCUIT FAILURE LEFT HO2S OR CIRCUIT FAILURE HO2S OR HO2S CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EGR TEMP SENSOR OR CKT FAILURE
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	51	FUEL INJECTOR OR CKT FAILURE
	53	RIGHT HO2S OR CIRCUIT FAILURE
	54	TCM TO ECU CIRCUIT FAILURE FAULTY A/T CONTROL UNIT
	55	NO DTCs DETECTED BY ECM

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	11	CAMSHAFT POS. OR CIRCUIT FAILURE
	12	MAF SENSOR OR MAF CKT FAILURE
	13	ECT SENSOR OR ECT CKT FAILURE
	14	VSS OR VSS CIRCUIT FAILURE
	21	IGNITION SIGNAL OR CKT FAILURE
	22	FUEL PUMP OR FP CIRCUIT FAILURE
	31	FAULTY ECM OR ECM CKT FAILURE
	32	EGR SENSOR OR EGR CKT FAILURE

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	33	LEFT HO2S OR CIRCUIT FAILURE O2S OR O2S CIRCUIT FAILURE HO2S OR HO2S CIRCUIT FAILURE
	34	KNOCK SENSOR OR KS CKT FAILURE
	35	EGR TEMP SENSOR OR CKT FAILURE
	41	IAT SENSOR OR IAT CKT FAILURE
	42	FUEL TEMP SENSOR OR CKT FAILURE
	43	TP SENSOR OR TPS CKT FAILURE
	45	INJECTOR LEAK
	51	FUEL INJECTOR OR CKT FAILURE
	53	RIGHT HO2S OR CIRCUIT FAILURE
	54	TCM TO ECU CIRCUIT FAILURE FAULTY A/T CONTROL UNIT
	55	NO DTCs DETECTED BY ECM

YEAR: 1995	DTC NO.	DESCRIPTOR
1995	11	CAMSHAFT POSITION SENSOR
	12	MAF SENSOR CIRCUIT
	13	ECT SENSOR CIRCUIT
	14	VSS CIRCUIT
	21	IGNITION SIGNAL CIRCUIT
	26	BOOST PRESSURE SENSOR
	31	ECM
	32	EGR MALFUNCTION
	33	HO2 SENSOR CIRCUIT MALFUNCTION (LEFT BANK V6)
	33	HO2 SENSOR CIRCUIT MALFUNCTION
	33	O2 SENSOR CIRCUIT MALFUNCTION
	34	KNOCK SENSOR CIRCUIT
	35	EGR TEMP. SENSOR CIRCUIT
	41	IAT SENSOR CIRCUIT
	42	FUEL TEMP. SENSOR CIRCUIT

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	43	TPS CIRCUIT
	45	INJECTOR LEAK
	51	INJECTOR CIRCUIT
	53	HO2 SENSOR CIRCUIT MALFUNCTION (RIGHT BANK V6)
	54	SIGNAL CIRCUIT FROM A/T CONTROL TO ECM
	55	NO FAILURE DETECTED

OBD II SYSTEMS

YEAR: 1995-98	DTC NO.	DESCRIPTION
1995-98 OBD II	P0000	No Failure Detected
	P0100	MAF Sensor Circuit Malfunction
	P0105	Absolute Pressure Sensor Malfunction
	P0110	IAT Sensor circuit malfunction
	P0115	ECT circuit malfunction
	P0120	TPS circuit malfunction
	P0125	Coolant temp. Sensor Circuit Malfunction, no Closed Loop Fuel Control
	P0130	Front (H)O2 Sensor Circuit Malfunction, no Closed Loop
	P0131	Front HO2 Sensor, Lean Shift Monitor
	P0132	Front HO2 Sensor, Rich Shift Monitor
	P0133	Front HO2 Sensor, Response Monitor
	P0134	Front HO2 Sensor, Excessively High Voltage
	P0135	Front HO2S Heater Circuit Malfunction (Right Bank)
	P0136	Rear HO2 Sensor Circuit Malfunction
	P0137	Rear HO2 Sensor, Minimum Voltage Monitor
	P0138	Rear HO2 Sensor, Maximum Voltage Monitor
	P0139	Rear HO2 Sensor, Response Monitor
	P0140	Rear HO2 Sensor, Excessively High Voltage

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTION
	P0141	Rear HO2 Sensor Heater Circuit Malfunction
	P0150	Front HO2 Sensor Circuit, No Closed Loop Control (Left Bank)
	P0151	Front HO2 Sensor, Lean Shift Monitor (Left Bank)
	P0152	Front HO2 Sensor, Rich Shift Monitor (Left Bank)
	P0153	Front HO2 Sensor, Response Monitor (Left Bank)
	P0154	Front HO2 Sensor, Excessively High Voltage (Left Bank)
	P0155	Front HO2 Sensor Heater Circuit Malfunction (Left Bank)
	P0156	Rear HO2 Sensor Circuit Malfunction (Left Bank)
	P0157	Rear HO2 Sensor, Minimum Voltage Monitor (Left Bank)
	P0158	Rear HO2 Sensor, Maximum Voltage Monitor (Left Bank)
	P0159	Rear HO2 Sensor, Response Monitor (Left Bank)
	P0160	Rear HO2 Sensor, Excessively High Voltage (Left Bank)
	P0161	Rear HO2 Sensor Heater Circuit Malfunction (Left Bank)
	P0170	Fuel Injection System Malfunction (Right Bank)
	P0171	Fuel System Malfunction, Lean Condition (Right Bank)
	P0172	Fuel System Malfunction, Rich Condition (Right Bank)
	P0173	Fuel Injection System Malfunction (Left Bank)
	P0174	Fuel System Malfunction, Lean Condition (Left Bank)
	P0175	Fuel System Malfunction, Rich Condition (Left Bank)
	P0180	Fuel Tank Temp. Sensor Circuit Malfunction
	P0300	Random Misfire Detected
	P0301	Cylinder No. 1, Misfire Detected
	P0302	Cylinder No. 2, Misfire Detected
	P0303	Cylinder No. 3, Misfire Detected
	P0304	Cylinder No. 4, Misfire Detected
	P0305	Cylinder No. 5, Misfire Detected
	P0306	Cylinder No. 6, Misfire Detected
	P0325	Knock Sensor Circuit Malfunction
	P0335	Crankshaft Position Sensor Circuit Malfunction
	P0340	Camshaft Position Sensor Circuit Malfunction
	P0400	EGR System Malfunction

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTION
	P0402	EGRC-BPT Valve Malfunction
	P0420	Three-way Catalyst System Malfunction (Right Bank)
	P0430	Three-way Catalyst System Malfunction (Left Bank)
	P0440	EVAP System, Small Leak Detected
	P0443	EVAP Purge Control Valve Circuit Malfunction
	P0446	EVAP Vent Control Valve, Circuit Malfunction
	P0450	EVAP System, Pressure Sensor Malfunction
	P0500	Vehicle Speed Sensor Malfunction
	P0505	IAC Valve-AAC, System Malfunction
	P0510	Closed Throttle Sensor Idle Switch Malfunction
	P0600	Signal Circuit from A/T to ECM Malfunction
	P0605	ECM Malfunction
	P0705	Park/Neutral (Inhibitor) Switch Malfunction
	P0710	Trans. Fluid Temp. Sensor Out of Range
	P0720	A/T VSS Circuit Malfunction
	P0725	Engine RPM signal Malfunction
	P0731	A/T 1st Gear Shift Signal Malfunction
	P0732	A/T 2nd Gear Shift Signal Malfunction
	P0733	A/T 3rd Gear Shift Signal Malfunction
	P0734	A/T 4th Gear Signal or TCC Malfunction
	P0740	TCC Solenoid Valve Malfunction
	P0744	A/T TCC Signal, Improper Lock-Up Operation
	P0745	Line Pressure Solenoid Valve Malfunction
	P0750	Shift Solenoid A, Malfunction
	P0755	Shift Solenoid B, Malfunction
	P1105	MAP/BARO Switch Solenoid Valve Malfunction
	P1110	Valve Timing Control Valve System Malfunction
	P1130	Swirl Control Solenoid Valve Malfunction
	P1150	W/G Control Solenoid Valve (Right Bank)
	P1155	W/G Control Solenoid Valve (Left Bank)
	P1160	Turbo Boost Sensor Circuit Malfunction
	P1165	Swirl Control Valve Vacuum Check Switch Malfunction

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTION
	P1168	Front HO2 Sensor Circuit Malfunction, no Closed Loop (Left Bank)
	P1220	Fuel Pump Control Module Circuit Malfunction
	P1320	Ignition Signal Primary Circuit Malfunction
	P1335	CKP Sensor (Reference) Circuit Malfunction
	P1336	CKP Sensor (OBD) or Flywheel Malfunction
	P1400	EGR Valve (and Canister) Control Solenoid Valve Malfunction
	P1401	EGR Temp. Sensor Circuit Malfunction
	P1402	EGR System Malfunction, High Flow
	P1440	EVAP Control System, Small Leak
	P1441	Vacuum Cut Valve Bypass Valve Malfunction
	P1443	Canister Control Vacuum Check Switch Malfunction
	P1444	Purge Control Valve or Solenoid Valve Malfunction
	P1445	Purge Volume Control Valve Malfunction
	P1446	EVAP Vent Control Valve Malfunction
	P1447	EVAP Purge Flow Monitoring Malfunction
	P1448	EVAP Vent Control System Malfunction
	P1550	TCC Solenoid Valve Malfunction
	P1605	A/T Diagnosis Communication Circuit Malfunction
	P1705	TPS Voltage Input to A/T Too High or Low
	P1706	Park/Neutral Switch Circuit Malfunction
	P1760	Overrun Clutch Solenoid Valve Malfunction
	P1775	TCC Solenoid Valve Circuit Malfunction
	P1776	A/T TCC Slip Detected During Lock-Up
	P1900	Cooling Fan Circuit Malfunction

SUBARU

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1. VEHICLES AND SYSTEMS

Using the **Asian Imports Cartridge**, the following Subaru vehicles can be diagnosed:

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1983						
BRAT	1.8L H4	ECC CARTER	A/T,M/T	ECULED	MANCODES	NONE
BRAT	1.8L H4	ECC HITACHI	A/T,M/T	ECULED	MANCODES	NONE
BRAT	1.8L H4	EFI TURBO	A/T	ECULED	MANCODES	NONE
DL	1.6L H4	ECC CARTER	M/T	ECULED	MANCODES	NONE
DL	1.6L H4	ECC HITACHI	M/T	ECULED	MANCODES	NONE
DL	1.8L H4	ECC CARTER	M/T	ECULED	MANCODES	NONE
DL	1.8L H4	ECC HITACHI	M/T	ECULED	MANCODES	NONE
GL	1.8L H4	ECC CARTER	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	ECC HITACHI	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	EFI TURBO	A/T	ECULED	MANCODES	NONE
STD	1.6L H4	ECC CARTER	M/T	ECULED	MANCODES	NONE
STD	1.6L H4	ECC HITACHI	M/T	ECULED	MANCODES	NONE
STD	1.8L H4	ECC CARTER	M/T	ECULED	MANCODES	NONE
STD	1.8L H4	ECC HITACHI	M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1984						
BRAT	1.8L H4	ECC CARTER	A/T,M/T	ECULED	MANCODES	NONE
BRAT	1.8L H4	ECC HITACHI	A/T,M/T	ECULED	MANCODES	NONE
BRAT	1.8L H4	EFI TURBO	A/T	ECULED	MANCODES	NONE
DL	1.6L H4	ECC CARTER	M/T	ECULED	MANCODES	NONE
DL	1.6L H4	ECC HITACHI	M/T	ECULED	MANCODES	NONE
DL	1.8L H4	ECC CARTER	M/T	ECULED	MANCODES	NONE
DL	1.8L H4	ECC HITACHI	M/T	ECULED	MANCODES	NONE
GL	1.8L H4	ECC CARTER	A/T,M/T	ECULED	MANCODES	NONE

MODEL (CONTINUED)	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
GL	1.8L H4	ECC HITACHI	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	EFI TURBO	A/T	ECULED	MANCODES	NONE
STD	1.6L H4	ECC CARTER	M/T	ECULED	MANCODES	NONE
STD	1.6L H4	ECC HITACHI	M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1985						
DL	1.8L H4	ECC	M/T	ECULED	MANCODES	NONE
GL	1.8L H4	ECC	A/T,M/T	ECULED	MANCODES	NONE
GL-10	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
RX SEDAN	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
SEDAN	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
XT COUPE	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT GL-10 COUPE	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1986						
3-DOOR	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
DL	1.8L H4	ECC	M/T	ECULED	MANCODES	NONE
GL	1.8L H4	ECC	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
RX SEDAN	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
XT COUPE	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT GL-10 COUPE	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1987						
DL 3-DOOR	1.8L H4	SPFI	M/T	ECULED	MANCODES	NONE
DL SEDAN/WAGON	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL 3-DOOR	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL 3-DOOR	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
GL	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
GL-10	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL-10	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
JUSTY	1.2L I3	ECC	M/T	ECULED	MANCODES	NONE
RX	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
XT	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
XT GL-10 COUPE	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT GL-10 COUPE	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1988						
DL	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
GL-10	1.8L H4	SPFI	A/T	ECULED	MANCODES	NONE
GL-10	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
JUSTY	1.2L I3	ECC	M/T	ECULED	MANCODES	NONE
RX	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
XT	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT6	2.7L H6	MPFI	A/T,M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1989						
DL	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
GL	1.8L H4	MPFI TURBO	A/T	ECULED	MANCODES	NONE
GL-10	1.8L H4	SPFI	A/T	ECULED	MANCODES	NONE
GL-10	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
JUSTY	1.2L I3	ECC	M/T	ECULED	MANCODES	NONE
RX	1.8L H4	MPFI TURBO	M/T	ECULED	MANCODES	NONE
XT	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT6	2.7L H6	MPFI	A/T,M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1990						
JUSTY	1.2L I3	ECC	M/T	ECULED	MANCODES	NONE
JUSTY	1.2L I3	MPFI	M/T	ECULED	MANCODES	NONE
JUSTY	1.2L I3	MPFI	ECVT	ECULED	MANCODES	NONE
LEGACY	2.2L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
LOYALE	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE
LOYALE	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
XT	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT6	2.7L H6	MPFI	4AT/5MT	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1991						
LEGACY	2.2L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
LEGACY	2.2L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
LOYALE	1.8L H4	SPFI	A/T,M/T	ECULED	MANCODES	NONE

MODEL (CONTINUED)	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
LOYALE	1.8L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
XT	1.8L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
XT6	2.7L H6	MPFI	A/T,M/T	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1992						
LEGACY	2.2L H4	MPFI	A/T,M/T	ECULED	MANCODES	NONE
LEGACY	2.2L H4	MPFI TURBO	A/T,M/T	ECULED	MANCODES	NONE
SVX	3.3L H6	MPFI	4AT	MIL	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1993						
SVX	3.3L H6	MPFI	4AT	MIL	MANCODES	NONE
LEGACY	2.2L H4	MPFI	4AT/5MT	ECULED	MANCODES	NONE
LEGACY	2.2L H4	MPFI TURBO	4AT/5MT	ECULED	MANCODES	NONE
IMPREZA	1.8L H4	MPFI	4AT/5MT	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1994						
SVX	3.3L H6	MPFI	4AT	MIL	MANCODES	NONE
LEGACY	2.2L H4	MPFI	4AT/5MT	ECULED	MANCODES	NONE
LEGACY	2.2L H4	MPFI TURBO	4AT/5MT	ECULED	MANCODES	NONE
IMPREZA	1.8L H4	MPFI	4AT/5MT	ECULED	MANCODES	NONE

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1995						
SVX	3.3L H6	MPFI	4AT	MIL	MANCODES	NONE
LEGACY	2.2L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
IMPREZA	1.8L H4	MPFI	4AT/5MT	ECULED	MANCODES	NONE

* For Adapter Type OBD II see Common Tet Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1996						
LEGACY	2.2L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
IMPREZA	1.8L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
IMPREZA	2.2L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
SVX	3.3L H6	MPFI	4AT	N/A	AUTOCODES	OBDII*

* For Adapter Type OBD II see Common Tet Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1997						
IMPREZA	1.8L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
IMPREZA	2.2L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
LEGACY	2.2L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
LEGACY	2.5L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
SVX	3.3L H6	MPFI	4AT	N/A	AUTOCODES	OBDII*

* For Adapter Type OBD II see Common Tet Modes OBD II Systems section for operating instructions and test mode information.

MODEL	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
1998						

MODEL (CONTINUED)	ENGINE	FUEL SYSTEM	TRANS TYPE	ECU MODES	CODE TYPE	ADAPTER TYPE
IMPREZA	2.2L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
IMPREZA	2.5L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
LEGACY	2.2L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
LEGACY	2.5L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*
FORESTER	2.5L H4	MPFI	4AT/5MT	N/A	AUTOCODES	OBDII*

* For Adapter Type OBD II see Common Tet Modes OBD II Systems section for operating instructions and test mode information.

2. SUBARU SPECIFIC INFORMATION

The Subaru vehicles covered by the Asian Imports Cartridge are separated into two different sections within the Asian Imports Operator's Manual. The vehicle's on-board system will determine which section of the Operator's Manual will need to be used. Vehicles that are OBD II certified have information about the operating test modes in the Common Test Modes OBD II Systems section of the Operator's Manual. Vehicles that have OBD or OBDI systems have test mode information in this section of the Operator's Manual. In these sections, you will find information on test modes available, how to connect the tester to the vehicle, and operating instructions for the different test modes. A complete list of Subaru Diagnostic Trouble Codes is included at the back of each section.

To determine which section of the Operator's Manual to use for diagnostic information and instructions, look at Adapter Type of the Vehicle and Systems chart. If the vehicle you are testing has an OBD II adapter type, use the Common Test Modes OBD II Systems section of the Operator's Manual. If the vehicle you are testing does not have the OBD II Adapter Type, use this section to diagnose the vehicle under test. TEST MODES AVAILABLE

3. TEST MODES AVAILABLE

The following test modes are available when testing Subaru vehicles. Operating instructions for test modes other than DTC Entry are included in the Common Test Modes OBD, OBD I Systems section. There are Subaru specific instructions for operating the test modes. Refer to *TEST MODES* on page 14.

MODE F1: DTC ENTRY

SUBMODE F0: HOW TO READ
- SUBMODE F0: U-CHECK
- SUBMODE F1: READ MEMORY
- SUBMODE F2: D-CHECK

SUBMODE F1: ENTER DTC(s)
SUBMODE F2: DTC LIST
SUBMODE F3: REVIEW DTC
SUBMODE F4: CLEAR DTC(s)

MODE F5: SYSTEM TESTS

SUBMODE F0: PREP VEHICLE

MODE F8: INFORMATION

SUBMODE F3: ID INFO
SUBMODE F4: DJC LOCATION
SUBMODE F5: ECU LOCATION

4. GETTING STARTED

Before operating the Asian Imports Cartridge with a Subaru vehicle, the following steps must be performed:

1. Make sure the vehicle ignition is OFF.
2. Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

> **NOTE**
>
> Since the cigarette lighter can be switched, some tests require that the power cable be directly connected to the battery via the battery adapter cable.

3. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester Stand-Alone Display

4. If the display is correct, press **ENTER**. If the display is not correct, refer to Appendix D.
5. Follow the instructions on the following page to select the vehicle type you are testing by entering required vehicle information into the tester.

5. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite Subaru.

Then press ENTER to select.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 8, 9 for 1989 models, 9, 0 for 1990 models, and so on.

SELECTING THE MODEL

The Model Select menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

SELECTING THE ENGINE

Next, the Engine Select menu is displayed. Press NO until the engine type of the vehicle is displayed, then press YES.

SELECTING THE FUEL SYSTEM TYPE

Next, the Fuel System select menu is displayed (selected models only). Press NO until the fuel system type of the vehicle is displayed, then press YES.

SELECTING THE TRANSMISSION TYPE

Next, the Transmission select menu is displayed (selected models only). Press NO until the transmission type of the vehicle is displayed, then press YES.

SELECTING THE EMISSION TYPE

Next, the Emission select menu is displayed (selected models only). Press NO until the emission type of the vehicle is displayed, then press YES.

SELECTING THE DRIVE TYPE

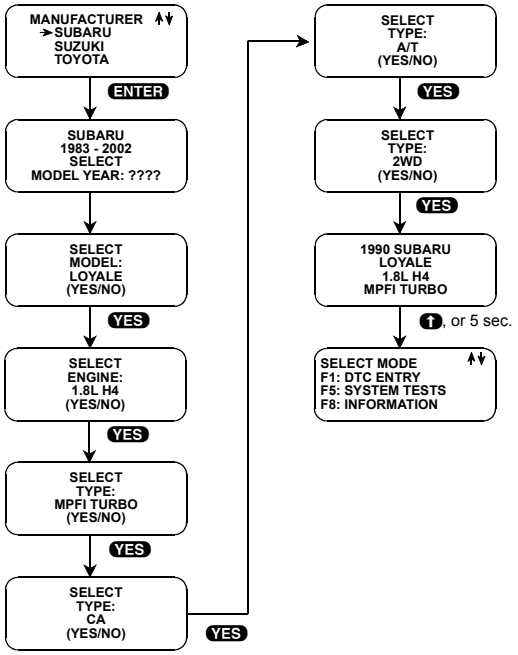
Next, the Drive select menu is displayed (selected models only). Press **NO** until the drive system type (2WD or 4WD) of the vehicle is displayed, then press **YES**.

VEHICLE INFORMATION DISPLAY

After the engine, transmission, emission and drive types are selected, the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type, and additional information such as the type of fuel system.

SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to Section 6 (Test Modes) Subaru Specific Instructions for operating the test modes with Subaru vehicles.



Subaru Vehicle Selection

ACTIVE KEYS	
0 - 9	Enter model year.
YES NO	Used to answer questions in tester display.
ENTER	Confirm Power-up display.
EXIT	Return to previous display.

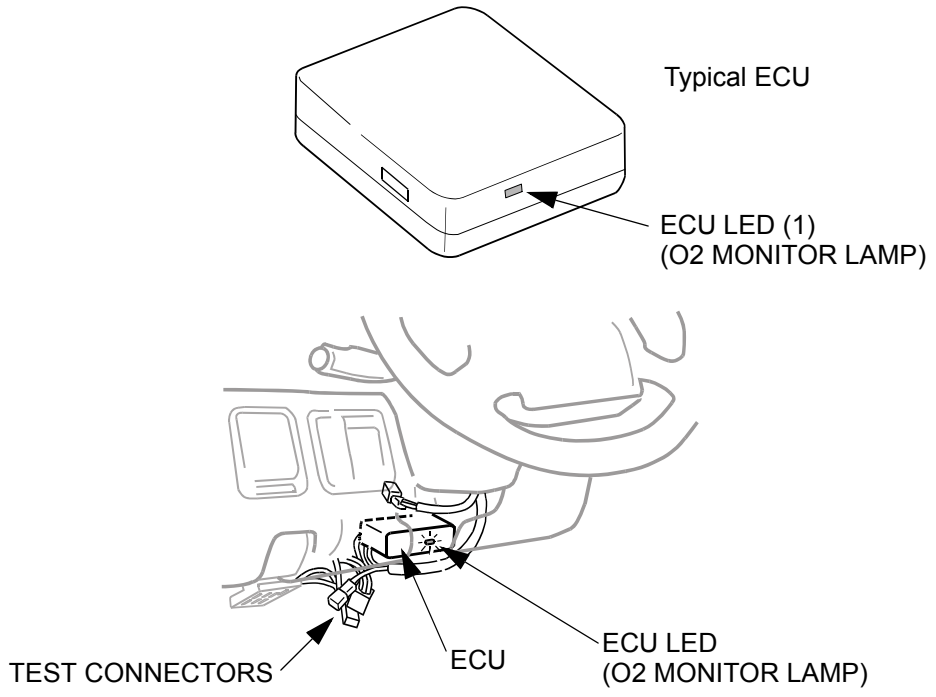
6. TEST MODES

When the Select Mode menu is displayed, test modes available for Subaru vehicles may be selected. You may select Mode F1: DTC Entry, Mode F5: System Tests, or Mode F8: Information without connecting the tester to the vehicle. Operating instructions for the test modes other than DTC Entry are included in the Common Test Modes OBD, OBD I Systems section.

Detailed operating instructions for using Mode F1: DTC Entry with Subaru vehicles are included in the following procedure.

READING CODES

When Mode F1: DTC Entry is selected, the tester displays submodes which, after your selection, provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

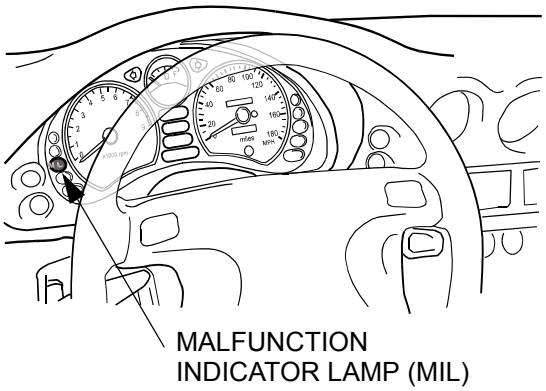


Manually Reading DTCs

To read DTC codes on Subaru vehicles you must connect the "Read Memory" or "Test Mode" connectors on the vehicle, then observe the instrument panel ECS lamp. If the ECS lamp is on, locate the ECU and observe the flashing LED. If you do not know where the ECU is located, select Mode F5: ECU Location from the Information menu. If necessary, refer to the Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the ECU, you can input the DTC into the tester so the tester can define the code. A

complete list of Subaru DTCs is also included in *SUBARU DIAGNOSTIC TROUBLE CODES (DTCs)* on page 22.



MODE F1: DTC ENTRY

When Mode F1: DTC ENTRY is selected, the tester displays five submodes:

F0: HOW TO READ
F1: ENTER DTC(s)
F2: DTC LIST
F3: REVIEW DTC
F4: CLEAR DTC(s)

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the factory service manual for this information, make sure that you are following the correct steps for the system you are working on.

Submode F0: U-Check

This mode is functioning during normal vehicle operation, as long as the check connectors are NOT connected. If a DTC is detected, the ECS Lamp will light up to indicate that inspection is necessary. This mode is a user-oriented mode which only diagnoses the necessary components for start-up and driveability.

Submode F1: Read Memory

To activate this submode, connect the Read Memory Connector while the Test Mode Connectors are disconnected. Use this mode to read past problems that have been stored in the vehicle ECU. Faults can be stored even when the monitor lamps are not lit. It effectively detects poor contact or loose connections of connectors, harnesses, etc. Step by step screen instructions provide information on DTC retrieval.

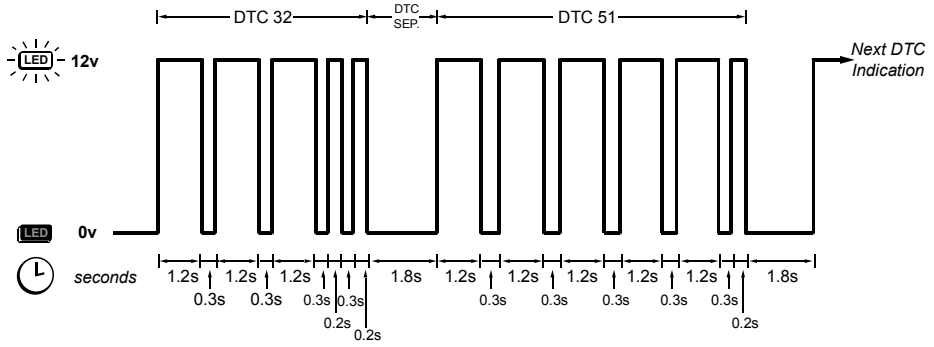
Submode F2: D-Check

To activate this mode, connect the Test Mode connector while the Read Memory Connector are disconnected. Use this mode to check the entire fuel system and to detect faulty parts. Step by step screen instructions provide information on DTC retrieval.

Submode F1: Enter DTC(s)

On Subaru vehicles, the Enter DTCs submode allows you to enter manually read DTCs. This submode provides you with a text description of the numeric DTC that was entered into the tester.

The Enter DTC submode has two question marks on the tester display for entering the DTC. The tester screen prompts you to enter the DTCs read off the ECU LED or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the ECU LED or MIL. Incorrect ECU LED or MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section.



Example of DTC Display and Timing

To manually read ECU Test Mode DTCs from 1983 Subaru vehicles using dashboard electronic control system (ECS) lamp and ECU LED (O2 Monitor LED), do the following:

1. Warm engine to normal operating temperature, turn all accessory switches OFF.
2. Turn OFF ignition key.
3. Connect the Test Mode connectors (black or clear). Use F4: DJC location from the Information menu for location information on the test mode connectors.
4. Start the engine and note the instrument panel ECS lamp (if engine will not start, read DTC from the O2 monitor ECU LED on the side of the ECU.

5a. If the ECS lamp is flashing ON/OFF in 1 second, then there are no Test Mode DTCs stored in the ECU. Disconnect Test Mode connectors and finish diagnosis.

5b. If the ECS lamp is ON while the engine is running, there are Test Mode DTCs stored in the ECU and the ECU LED will begin flashing DTCs. Use F5: ECU location from the Information menu for location information on the electronic control unit.

If Test Mode DTCs are stored in ECU, the ECU LED will begin indicating the DTCs. ECU LED flashes 10's digit, then the 1's digit with a 0.3 second delay. Each DTC is separated by a 1.8 second interval. DTC series is separated by a 1.8 second interval. If no DTCs are stored in ECU, the normal condition will be flashed on the ECS lamp. The normal condition is one ECS lamp flash every 1 second.

5c. If ECS lamp is OFF while engine is running, idle engine for 1 minute, vary engine RPM by performing 5 brief wide open throttle openings, place transmission in gear and raise RPM to stall, place transmission back into park, and hold RPM at 2500 for 1 minute. After completion, go to 5a above.

6. The normal condition is one ECS lamp flash in 1 second.
7. Disconnect Test Mode connectors .

8. Erase DTCs when all repairs are completed.

To manually read Test Mode DTCs from 1983-1986 carbureted Subaru vehicles using the Electronic Control System (ECS) Lamp and ECU LED (O2 Monitor LED), do the following:

1. Warm engine to normal operating temperature, turn all accessories switches OFF.
2. Turn key OFF.
3. Connect Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
4. Turn key ON (Do not start engine). ECS Lamp should flash an identification DTC on the O2 Monitor Lamp. Use F5: ECU LOCATION from the Information menu for ECU location information.
5. Start engine. ECS Lamp should OFF.
6. Drive vehicle for over 60 feet then idle engine for 1 minute.
7. Perform 2 brief WOT and run engine at 2500 RPM until ECS Lamp turns ON.
8. If ECS Lamp stays ON, record DTC(s) that are flashed by the O2 Monitor Lamp. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay. If the ECS Lamp blinks, the system is normal. Turn the key OFF and disconnect the Test Mode Connectors.

To manually read Test Mode DTCs from 1984 EFI Turbo Subaru vehicles using the Electronic Control System (ECS) Lamp and ECU LED (O2 Monitor LED), do the following:

1. Warm engine to normal operating temperature, turn all accessories switches OFF.
2. Turn key OFF.
3. Connect Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
4. Turn key ON (Do not start engine). ECS Lamp should turn ON and the fuel pump should cycle every 1.5 seconds.
5. Start engine. If engine will not start, check for DTC(s) by observing the O2 Monitor Lamp. If engine starts and the ECS Lamp turns ON, check for DTC(s) by observing the O2 Monitor Lamp. If engine starts and the ECS Lamp turns OFF, run the engine at idle for 1 minute.
6. Perform 5 brief WOT, place the transmission in gear, and run the engine up to stall speed in order to operate the pressure switch. Run the engine at 2500 RPM until the ECS Lamp turns ON.
7. If ECS Lamp stays ON, record DTC(s) that are flashed by the O2 Monitor Lamp. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay.
8. If the ECS Lamp blinks, the system is normal. Turn the key OFF and disconnect the Test Mode Connectors.

To manually read Test Mode DTCs from 1985-1986 MPFI Subaru vehicles using the Electronic Control System (ECS) Lamp and ECU LED (O2 Monitor LED), do the following:

1. Warm engine to normal operating temperature, turn all accessories switches OFF.
2. Turn key OFF.
3. Connect Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.

4. Turn key ON (Do not start engine). ECS Lamp should turn ON and the fuel pump should cycle every 1.5 seconds.
5. Start engine. If engine will not start, check for DTC(s) by observing the O2 Monitor Lamp. If engine starts and the ECS Lamp turns ON, check for DTC(s) by observing the O2 Monitor Lamp. If engine starts and the ECS Lamp turns OFF, run the engine at idle for 1 minute.
6. Perform 5 brief WOT, place the transmission in gear, and run the engine up to stall speed in order to operate the pressure switch.
7. Run the engine at 2500 RPM until the ECS Lamp turns ON.
8. If ECS Lamp stays ON, record DTC(s) that are flashed by the O2 Monitor Lamp. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay.
9. If the ECS Lamp blinks, the system is normal. Turn the key OFF and disconnect the Test Mode Connectors.

To manually read Test Mode DTCs from 1986 SPFI Subaru vehicles using the Electronic Control System (ECS) Lamp and ECU LED (O2 Monitor LED), do the following:

1. Warm engine to normal operating temperature, turn all accessories switches OFF.
2. Turn key OFF.
3. Connect the green Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
4. Connect the Clear Memory connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
5. Turn key ON (Do not start engine). ECS Lamp should turn ON. The DTC that is flashed should correctly identify the vehicle under test. DTC 11 identifies a California emissions vehicle. DTC 12 identifies a Federal emissions vehicle. Use F5: ECU LOCATION from the Information menu for ECU location.
6. Disconnect the Clear Memory connectors.
7. Start engine. The ECS Lamp should turn OFF.
8. Drive vehicle above 6 MPH for over 1 minute.
9. Run engine above 2500 RPM until the ECS Lamp turns ON. If the ECS Lamp stays ON, check for DTC(s) by observing the O2 Monitor Lamp mounted on the ECU. Use F5: ECU LOCATION from the Information menu for ECU location. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay.
10. If the ECS Lamp blinks, the system is normal. Turn the key OFF and disconnect the Test Mode Connectors.

To manually read Test Mode DTCs from 1987-1995 SPFI and MPFI Subaru vehicles (except Justy and SVX) using the Malfunction Indicator Lamp (MIL) and ECU LED (O2 Monitor LED) do the following:

1. Warm engine to normal operating temperature, turn all accessories switches OFF.
2. Turn key OFF.
3. Connect Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
4. Turn key ON (Do not start engine). The MIL should turn ON.

5. Depress accelerator pedal to WOT then return it to half-throttle and hold it for 2 seconds. Then release pedal completely.
6. Start engine. The MIL should turn OFF. If the MIL stays ON, note the DTC(s) and continue.
7. Perform brief WOT, then drive the vehicle greater than 7 MPH for at least 1 minute (and shift up to 4th gear for manual transmissions).
8. Run the engine above 2000 RPM until the MIL turns ON. If the MIL stays ON, record DTC(s) that are flashed by the MIL or O2 Monitor Lamp depending on the model being tested. Use F5: ECU LOCATION from the Information menu to observe the O2 Monitor Lamp located on the ECU. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay. If the MIL blinks, the system is normal.
9. Turn the key OFF and disconnect the Test Mode Connectors.
10. Erase DTC(s) when all repairs are completed. Use F4: CLEAR DTC(s) from the DTC Entry menu for instructions on how to clear the DTC(s) from the vehicle and the tester.

To manually read Test Mode DTCs from 1987-1988 Subaru Justy vehicles using the Malfunction Indicator Lamp (MIL) and ECU LED (O2 Monitor LED), do the following:

1. Warm engine to normal operating temperature, turn all accessories switches OFF.
2. Turn key OFF.
3. Connect the green Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
4. Turn key ON (Do not start engine). The MIL should turn ON. The DTC that is flashed should correctly identify the vehicle under test. Use F5: ECU LOCATION from the Information menu for ECU location.
5. Start engine. The MIL should turn OFF.
6. Drive vehicle above 3 MPH for more than 60 feet
7. Allow engine to idle for over 20 seconds.
8. Turn clearance lamps (parking lamps), rear defogger, radiator and heater fans ON and then all OFF.
9. Run engine above 2700 RPM until the MIL turns ON. If the MIL stays ON, check for DTC(s) by observing the O2 Monitor Lamp mounted on the ECU. Use F5: ECU LOCATION from the Information menu for ECU location. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay.If the MIL blinks, the system is normal.
10. Turn the key OFF and disconnect the Test Mode Connectors.
11. Erase DTC(s) when all repairs are completed. Use F4: CLEAR DTC(s) from the DTC Entry menu for instructions on how to clear the DTC(s) from the vehicle and the tester.

To manually read Test Mode DTCs from 1989-1990 Subaru Justy vehicles using the Malfunction Indicator Lamp (MIL) and ECU LED (O2 Monitor LED), do the following:

1. Connect the green Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
2. Turn key ON (Do not start engine). The MIL should turn ON. The DTC that is flashed should correctly identify the vehicle under test. Use F5: ECU LOCATION from the Information menu for ECU location.
3. Start engine. The MIL should turn OFF.
4. Warm engine to normal operating temperature.

5. Depress clutch pedal completely then slowly release pedal completely.
6. Turn clearance lamps (parking lamps), rear defogger, and heater fans ON and then all OFF.
7. Drive vehicle above 30 MPH and at engine speed over 2500 RPM.
8. Keep engine speed above 2700 RPM until the MIL turns ON. If the MIL stays ON, check for DTC(s) by observing the O2 Monitor Lamp mounted on the ECU. Use F5: ECU LOCATION from the Information menu for ECU location. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay. If the MIL blinks, the system is normal.
9. Turn the key OFF and disconnect the Test Mode Connectors.
10. Erase DTC(s) when all repairs are completed. Use F4: CLEAR DTC(s) from the DTC Entry menu for instructions on how to clear the DTC(s) from the vehicle and the tester.

To manually read Test Mode DTCs from 1990 Subaru Justy MPFI vehicles using the Malfunction Indicator Lamp (MIL) and ECU LED (O2 Monitor LED), do the following:

1. Start the engine and warm to normal operating temperature.
2. Turn key OFF.
3. Connect the green Test Mode connectors. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
4. Turn key ON (Do not start engine). The MIL should turn ON. The DTC that is flashed should correctly identify the vehicle under test. Use F5: ECU LOCATION from the Information menu for ECU location.
5. Depress accelerator pedal to floor and then slowly release.
6. Start engine.
7. Turn heater fan, headlamp, and rear defogger switches ON and then all OFF.
8. Drive vehicle above 7 MPH.
9. Operate the engine speed above 2000 RPM until the MIL turns ON. If the MIL stays ON, check for DTC(s) by observing the O2 Monitor Lamp mounted on the ECU. Use F5: ECU LOCATION from the Information menu for ECU location. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay. If the MIL blinks, the system is normal.
10. Turn the key OFF and disconnect the Test Mode Connectors.
11. Erase DTC(s) when all repairs are completed. Use F4: CLEAR DTC(s) from the DTC Entry menu for instructions on how to clear the DTC(s) from the vehicle and the tester.

To manually read Test Mode DTCs from 1992-1995 SVX Subaru vehicles using the Malfunction Indicator Lamp (MIL) and ECU LED (O2 Monitor LED), do the following:

1. Warm engine to normal operating temperature, turn all accessories switches OFF.
2. Turn key OFF.
3. Connect either diagnostic lead to pin 1 of the black connector. Use F4: DJC LOCATION from the Information menu for test mode connectors location.
4. Turn key ON (Do not start engine). The MIL should turn ON.
5. Start engine. The MIL should turn OFF. If the MIL stays ON, note the DTC(s) and continue.
6. Drive the vehicle greater than 7 MPH for at least 1 minute.

7. Run the engine above 2000 RPM until the MIL turns ON. If the MIL flashes DTC(s), perform fix. The long segment (1.2 seconds ON) represents the tens digit. The short segment (0.2 seconds ON) represents the ones digit. Each DTC is separated by a 1.8 second delay. If the MIL blinks, the system is normal.
8. Turn key OFF and disconnect diagnostic leads.
9. Erase DTC(s) when all repairs are completed. Use F4: CLEAR DTC(s) from the DTC Entry menu for instructions on how to clear the DTC(s) from the vehicle and the tester.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions You can also select the DTCs obtained from the ECU LED as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the ECU LED. You can "Select" the DTC on the tester screen for later review or printing. Refer to the Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC

This submode provides a way of reviewing DTCs that you selected or entered in the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This helpful mode provides information on how to clear DTCs that the user would normally have to locate in the vehicle's service manual.

Submode F0: From ECU

This submode provides step by step text screen instructions on how to clear DTCs from the ECU memory. These instructions are specific to the vehicle under test and should be followed closely. The dealer uses this mode to clear the DTCs from the memory after the affected part is repaired.

Submode F0: From Tester

This submode clears the tester memory of all DTCs that the user has entered or selected from the tester.

7. SUBARU DIAGNOSTIC TROUBLE CODES (DTCs)

DTCs available for Subaru vehicles are listed in the following tables.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

OBD, OBD I SYSTEMS

YEAR: 1983	DTC NO.	DESCRIPTOR
1983	11	IGNITION PULSE FAILURE. IGN. PULSE SYS. (ENG OFF/CC/HA).
	12	STARTER SWITCH IN OFF MODE. IGN. PULSE SYS. (ENG OFF/CC/SL).
	13	STARTER SWITCH IN ON MODE. DUTY SOLENOID VLV REMAINS OFF.
	14	AIR FLOW METER OR CKT FAILURE. VACUUM SW 1 OFF (TEST MODE ONLY)
	15	SOLENOID VALVE 3 REMAINS OFF.
	21	AIR FLOW METER FLAP SEIZED. IGN. PULSE SYS. (ENG OFF/HC/HA).
	22	PRESSURE SWITCH FIXED ON/OFF POS IGN. PULSE SYS. (ENG OFF/HC/SL).
	23	IDLE SW FIXED ON/OFF POSITION. O2 SENSOR OR CIRCUIT FAILURE.
	24	FULL SW FIXED ON/OFF POSITION. VACUUM SW 2 OFF (TEST MODE ONLY)
	25	SOLENOID VALVE 1 REMAINS OFF.
	31	DUTY SOLENOID VLV REMAINS ON.
	32	THERMO SENSOR OR CIRCUIT FAILURE. O2 SENSOR OR CIRCUIT FAILURE.
	33	COOLANT THERMO SENSOR OR CKT. FDBK SYS FAILURE (TEST MODE ONLY)
	34	ASP. AIR THERMO SNSR OR CIRCUIT. AUTO CHOKE POWER REMAINS OFF.
	41	VACUUM SW 1 ON (TEST MODE ONLY)
	42	INJ FIXED IN ON/OFF POSITION. VACUUM SW 2 ON (TEST MODE ONLY)

YEAR: 1983 (CONTINUED)	DTC NO.	DESCRIPTOR
	43	AUTO CHOKE POWER REMAINS ON.
	51	SOLENOID VALVE 3 REMAINS ON.
	52	SOLENOID VALVE 1 REMAINS ON.

YEAR: 1984	DTC NO.	DESCRIPTOR
1984	11	IG PULSE FAILURE (OPEN/SHORT CKT) IGN. PULSE SYS. (ENG OFF/CC/MT).
	12	STARTER SW OR CKT REMAINS OFF IGN. PULSE SYS. (ENG OFF/CC/AT).
	13	STARTER SW OR CKT REMAINS ON IGN. PULSE SYS. (ENG OFF/HC/MT).
	14	AIR FLOW METER OR CKT FAILURE. IGN. PULSE SYS. (ENG OFF/HC/AT).
	15	IGN. PULSE SYS. (ENG OFF/CC/MT).
	16	IGN. PULSE SYS. (ENG OFF/CC/AT).
	17	IGN. PULSE SYS. (ENG OFF/HC/MT).
	18	IGN. PULSE SYS. (ENG OFF/HC/AT).
	21	AIR FLOW METER FLAP SEIZED.
	22	PRESSURE SWITCH FIXED ON/OFF POS VSS FAIL. (AT IN TEST MODE ONLY).
	23	IDLE SWITCH OR CIRCUIT FAILURE. O2 SENSOR OR CIRCUIT FAILURE.
	24	WOT SWITCH OR CIRCUIT FAILURE. THERMO SNSR FAIL LESS THAN 68degF
	25	THERMO SNSR FAIL ABOVE 230degF.
	31	DUTY SOLENOID VLV REMAINS ON.
	32	O2S OR CKT FAIL. (LOW OUTPUT). DUTY SOLENOID VLV REMAINS OFF.
	33	COOLANT THERMO SENSOR OR CKT. FDBK SYS FAILURE (TEST MODE ONLY)
	34	ASP. AIR THERMO SNSR OR CIRCUIT. BACKUP SYS FAIL. MEMORY NOT HIGH.
	35	BACKUP SYS FAIL. MEMORY NOT LOW.
	41	HIGH ALTITUDE SENSOR OR CKT.

YEAR: 1984 (CONTINUED)	DTC NO.	DESCRIPTOR
	42	FUEL INJ. OR CKT (OPEN OR SHORT) VACUUM SW 2 ON (TEST MODE ONLY)
	43	VACUUM SW 2 OFF (TEST MODE ONLY)
	44	VACUUM SW 1 ON (TEST MODE ONLY)
	45	VACUUM SW 1 OFF (TEST MODE ONLY)
	52	SOLENOID VALVE 1 REMAINS ON.
	53	SOLENOID VALVE 1 REMAINS OFF.
	54	AUTO CHOKE POWER REMAINS ON.
	55	AUTO CHOKE POWER REMAINS OFF.
	62	SOL VLV2 ON (AT/MT/FED/not 4WD).
	63	SOL VLV2 OFF(AT/MT/FED/not 4WD).
	73	IGN. PULSE SYS. (ENG OFF/HC/MT).
	77	IGN. PULSE SYS. (ENG OFF/HC/MT).

YEAR: 1985	DTC NO.	DESCRIPTOR
1985	11	IG PULSE OR CKT (NO IG PULSE) IG PULSE-ENG OFF (5MT/2WD/49ST) IGN SW SIGNAL OR CKT FAILURE
	12	STARTER SW OR CKT-OFF MODE IG PULSE-ENG OFF (AT/FF/49ST) STARTER SW OR CKT-REMAINS OFF
	13	STARTER SW OR CKT-IN ON MODE STARTER SW OR CKT-REMAINS ON
	14	AIR FLOW METER OR CKT FAILURE AIR FLOW METER FLAP POSITION
	15	IGN PULSE-ENG. OFF(4MT/FF/49ST)
	21	AIR FLOW METER FLAP SEIZED
	22	PRESSURE SWITCH IN ON/OFF POS. VEHICLE SPEED SNSR OR CIRCUIT PRESSURE SWITCH ON/OFF FAILURE VACUUM SWITCH ON/OFF FAILURE VACUUM SWITCH IN ON/OFF POS.
	23	IDLE SWITCH IN ON/OFF POS. O2 SENSOR OR CIRCUIT FAILURE IDLE SWITCH ON/OFF FAILURE

YEAR: 1985 (CONTINUED)	DTC NO.	DESCRIPTOR
	24	WOT SWITCH IN ON/OFF POS. THERMO SENSOR OR CKT FAILURE WOT SWITCH ON/OFF FAILURE
	25	PRESSURE SENSOR OR CKT FAILURE
	31	VEHICLE SPEED SNSR OR CIRCUIT SPEED SNSR FAIL ABOVE 6 MPH
	32	O2 SENSOR OR CIRCUIT FAILURE DUTY SOLENOID VALVE OR CKT
	33	COOLANT THERMO-SNSR OR CIRCUIT FEEDBACK SYSTEM (TEST MODE ONLY)
	34	ASPIRATED AIR THERMOSENSOR BACK-UP SYSTEM OR CKT FAILURE
	35	EGR SOL SWITCH ON/OFF OR CKT EGR SOL DRIVER CKT FAILURE
	41	BARO SENSOR OR CIRCUIT FAILURE
	42	FUEL INJ. FIXED IN ON/OFF POS. CLUTCH SW OR CKT (EXC. AT & 4WD)
	43	KDLH RELAY FIXED IN ON/OFF POS. KDLH DRIVER CKT FAILURE
	52	ASV SOL VALVE OR CIRCUIT FAILURE
	53	FUEL PUMP OR CIRCUIT FAILURE
	54	AUTO CHOKE CNTRL OR CKT FAILURE
	55	SHIFT-UP CNTRL SYSTEM (AT ONLY)
	62	EGR SOL VALVE OR CKT FAILURE
	63	CANP SOL VALVE OR CKT FAILURE
	64	VLC SOL VALVE OR CKT FAILURE
	65	FCV SOL VALVE OR CKT FAILURE
	71	IGN PULSE-ENG. OFF (5MT/FF/CA)
	72	IGN PULSE-ENG. OFF (AT/FF/CA)
	73	IGN PULSE-ENG. OFF (5MT/4WD/CA)
	74	IGN PULSE-ENG. OFF (AT/4WD/CA)

YEAR: 1986	DTC NO.	DESCRIPTOR
1986	11	IG PULSE OR CKT (NO IG PULSE) IG PULSE-ENG OFF (5MT/2WD/49ST) IGN SW SIGNAL OR CKT FAILURE
	12	STARTER SW OR CKT-IN OFF MODE
	13	STARTER SW OR CKT-IN ON MODE
	14	AIR FLOW METER OR CKT FAILURE
	15	PRESSURE SWITCH IN ON/OFF POS.
	16	CKP SENSOR OR CIRCUIT FAILURE
	17	STARTER SWITCH OR CKT FAILURE
	21	AIR FLOW METER FLAP SEIZED
	22	VEHICLE SPEED SNSR OR CIRCUIT PRESSURE SWITCH IN ON/OFF POS. VACUUM SWITCH IN ON/OFF POS.
	23	O2 SENSOR OR CIRCUIT FAILURE IDLE SW OR CKT ON/OFF FAILURE
	24	THERMO SENSOR OR CKT FAILURE WOT SW OR CKT ON/OFF FAILURE
	25	PRESSURE SENSOR OR CKT FAILURE TPS IDLE SWITCH OR CKT FAILURE
	31	VEHICLE SPEED SNSR OR CIRCUIT
	32	DUTY SOLENOID VALVE OR CKT O2 SENSOR OR CIRCUIT FAILURE
	33	FEEDBACK SYSTEM (TEST MODE ONLY) COOLANT THERMO-SNSR OR CIRCUIT
	34	BACK-UP SYSTEM OR CKT FAILURE ASPIRATED AIR THERMOSENSOR
	35	EGR SOL SWITCH ON/OFF OR CKT AIR FLOW METER OR CKT FAILURE
	41	BARO SENSOR OR CIRCUIT FAILURE
	42	CLUTCH SW OR CKT (EXC. AT & 4WD) FUEL INJ. FIXED IN ON/OFF POS. FUEL INJECTOR OR CIRCUIT FAILURE
	43	KDLH RELAY FIXED IN ON/OFF POS.
	46	NEUT/PARKING SW OR CKT FAILURE
	52	ASV SOL VALVE OR CIRCUIT FAILURE
	53	FUEL PUMP CNTRL OR CKT FAILURE FUEL PUMP OR CIRCUIT FAILURE

YEAR: 1986 (CONTINUED)	DTC NO.	DESCRIPTOR
	54	AUTO CHOKE CNTRL OR CKT FAILURE
	55	SHIFT-UP CNTRL SYSTEM (AT ONLY) KDLH CONTROL SYSTEM OR CKT
	57	CANP SOL VALVE OR CKT FAILURE
	58	AIR CNTRL VALVE OR CKT FAILURE
	62	EGR SOL VALVE OR CKT FAILURE
	63	CANP SOL VALVE OR CKT FAILURE
	64	VLC SOL VALVE OR CKT FAILURE
	65	FCV SOL VALVE OR CKT FAILURE
	71	IGN PULSE-ENG. OFF (5MT/2WD/CA)
	73	IGN PULSE-ENG. OFF (5MT/4WD/CA)
	74	IGN PULSE-ENG. OFF (AT/4WD/CA)
	88	SPFI CONTROL UNIT FAILURE

YEAR: 1987	DTC NO.	DESCRIPTOR
1987	1	SPEC CODE MT/49ST/CAN
	2	SPEC CODE MT/CAL
	3	SPEC CODE AT/49ST/CAN
	4	SPEC CODE AT/CAL
	5	SPEC CODE MT/FED
	6	SPEC CODE MT/CAL/CAN
	7	SPEC CODE AT/FED
	8	SPEC CODE AT/CAL/CAN
	11	CRANK ANGLE SNSR REF PULSE OR CKT IGN PULSE CKT FAULT (ENG OFF)
	12	STARTER SW ON/ OFF (CRANKING) BACK-UP SYSTEM OR CKT FAILURE
	13	CKP SENSOR OR CIRCUIT FAILURE
	14	FUEL INJ. 1 & 2 OR CKT FAILURE DUTY SOLENOID VALVE OR CKT FUEL INJ. OUTPUT OR CKT FAILURE
	15	FUEL INJ. 3 & 4 OR CKT FAILURE

YEAR: 1987 (CONTINUED)	DTC NO.	DESCRIPTOR
	21	WATER TEMP. SNSR SIGNAL OR CKT THERMO SENSOR OR CKT FAILURE
	22	KS OR KS CIRCUIT FAILURE VLC SOLENOID VALVE OR CKT
	23	AIR FLOW METER OR CKT FAILURE PRESSURE SENSOR OR CKT FAILURE
	24	IDLE UP SOLENOID OR CKT FAILURE AIR CONTROL VLV OR CKT FAILURE
	25	FCV SOLENOID OR CIRCUIT FAILURE
	31	THROTTLE SENSOR OR CKT FAILURE
	32	O2 SENSOR OR CIRCUIT FAILURE O2S SYSTEM OR CIRCUIT FAILURE
	33	VEHICLE SPEED SENSOR SIGNAL VEHICLE SPEED SNSR OR CIRCUIT
	34	EGR SOL VALVE ON/OFF OR CKT
	35	PURGE SOL VALVE ON/OFF OR CKT PURGE SOLENOID CONTROL SYSTEM
	41	SYSTEM LEAN CONDITION FEEDBACK SYSTEM OR CKT FAILURE
	42	IDLE SWITCH OR CIRCUIT FAILURE
	44	WASTEGATE SOL OR CKT FAILURE
	45	KDWN CNTRL RLY (ON/OFF POS.)
	51	NEUTRAL SW CKT (REMAINS ON)
	52	CLUTCH SWITCH OR CKT FAILURE
	61	PARKING SW CKT (REMAINS ON)
	62	IDLE-UP SYS. OR CKT(CL/REAR DEF)
	63	IDLE-UP SYS CKT (HTR/RAD FAN)

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	1	SPEC CODE FWD/49ST/CAN SPEC CODE MT/49ST/CAN
	2	SPEC CODE FWD/CAL SPEC CODE MT/CAL
	3	SPEC CODE AT/49ST/CAN

YEAR: 1988 (CONTINUED)	DTC NO.	DESCRIPTOR
	4	SPEC CODE AT/CAL
	5	SPEC CODE 4WD/49ST/CAN SPEC CODE MT/49ST/CAN
	6	SPEC CODE 4WD/CA SPEC CODE MT/CAL
	7	SPEC CODE AT/49ST/CAN
	8	SPEC CODE AT/CAL
	11	CRANK ANGLE SNSR REF PULSE OR CKT
	12	STARTER SW ON/OFF (CRANKING)
	13	CKP SENSOR OR CIRCUIT FAILURE
	14	FUEL INJ. 1 & 2 OR CKT FAILURE FUEL INJ. 5 & 6 OR CKT FAILURE FUEL INJ. OUTPUT OR CKT FAILURE DUTY SOLENOID VALVE OR CKT
	15	FUEL INJ. 3 & 4 OR CKT FAILURE FUEL INJ. 1 & 2 OR CKT FAILURE CFC SYSTEM OR CIRCUIT FAILURE
	21	WATER TEMP. SNSR SIGNAL OR CKT
	22	KS OR KS CIRCUIT FAILURE VLC SOLENOID VALVE OR CKT
	23	AIR FLOW METER OR CKT FAILURE PRESSURE SENSOR OR CKT FAILURE
	24	BYPASS AIR CONT. VALVE OR CIRCUIT AIR CONTROL VLV OR CKT FAILURE IDLE UP SOLENOID OR CKT FAILURE
	25	FUEL INJ. 3 & 4 OR CKT FAILURE FCV SOLENOID OR CIRCUIT FAILURE
	31	THROTTLE SENSOR OR CKT FAILURE
	32	O2 SENSOR OR CIRCUIT FAILURE O2S SYSTEM OR CIRCUIT FAILURE
	33	VEHICLE SPEED SENSOR SIGNAL VEHICLE SPEED SNSR OR CIRCUIT
	34	EGR SOL VALVE ON/OFF OR CKT EGR LINE CLOGGED OR CKT (CA ONLY)
	35	PURGE SOL VALVE ON/OFF OR CKT PURGE SOLENOID CONTROL SYSTEM
	41	SYSTEM LEAN CONDITION
	42	IDLE SWITCH OR CIRCUIT FAILURE
	45	KDWN CNTRL RLY (ON/OFF POS.)

YEAR: 1988 (CONTINUED)	DTC NO.	DESCRIPTOR
	51	NEUT SWITCH OR CKT (NO SIGNAL) NEUTRAL SW CKT (REMAINS ON)
	52	CLUTCH SW OR CKT FAIL (FWD ONLY)
	55	EGR GAS TEMP. SENSOR (CA ONLY)
	61	PARKING SW CKT (SW REMAINS ON)
	62	IDLE-UP SYSTEM 1 OR CKT FAILURE
	63	IDLE-UP SYSTEM 2 OR CKT FAILURE

YEAR: 1989	DTC NO.	DESCRIPTOR
1989	1	SPEC CODE MT/49ST/CAN
	2	SPEC CODE MT/CAL
	3	SPEC CODE AT/49ST/CAN SPEC CODE AT/4WD/49ST/CAN
	4	SPEC CODE AT/CAL SPEC CODE AT/4WD/CAL
	5	SPEC CODE MT/FED/CAN
	6	SPEC CODE MT/CAL
	7	SPEC CODE AT/FWD/CAN/49ST SPEC CODE AT/FED/CAN
	8	SPEC CODE AT/FWD/CAL SPEC CODE AT/CAL
	11	CRANK ANGLE SNSR REF PULSE OR CKT
	12	STARTER SW ON/OFF (CRANKING)
	13	CKP SENSOR OR CIRCUIT FAILURE
	14	FUEL INJ. 1 & 2 OR CIRCUIT FUEL INJ. 5 & 6 OR CIRCUIT FUEL INJ. OUTPUT OR CKT FAILURE DUTY SOL. VLV. OR CKT FAILURE
	15	FUEL INJ. 3 & 4 OR CIRCUIT FUEL INJ. 1 & 2 OR CIRCUIT CFC SYSTEM OR CKT (MT ONLY)
	16	FEEDBACK SYSTEM OR CKT FAILURE
	17	FUEL PUMP AUTO CHOKE OR CKT
	21	WATER TEMP. SNSR SIGNAL OR CKT THERMOSENSOR OR CIRCUIT FAILURE

YEAR: 1989 (CONTINUED)	DTC NO.	DESCRIPTOR
	22	KS OR KS CIRCUIT FAILURE VLC SOLENOID VLV OR CKT FAILURE
	23	AIR FLOW METER OR CKT FAILURE PRESSURE SENSOR OR CKT FAILURE
	24	BYPASS AIR CONT. VALVE OR CKT IDLE UP SOLENOID OR CKT FAILURE AIR CONTROL VLV OR CKT FAILURE
	25	FUEL INJ. 3 & 4 OR CIRCUIT FCV SOLENOID OR CIRCUIT FAILURE
	31	THROTTLE SENSOR OR CKT FAILURE
	32	O2 SENSOR OR CIRCUIT FAILURE
	33	VEHICLE SPEED SENSOR SIGNAL
	34	EGR SOL VALVE ON/OFF OR CKT EGR LINE CLOGGED OR CKT (CA ONLY)
	35	PURGE SOL VALVE ON/OFF OR CKT CPC SOLENOID OR CIRCUIT FAILURE
	41	SYSTEM LEAN CONDITION FEEDBACK SYSTEM FAIL (CA ONLY)
	42	IDLE SWITCH OR CIRCUIT FAILURE
	44	WASTEGATE CNTRL SOL OR CIRCUIT
	45	KDWN CNTRL RLY (ON/OFF POS.)
	46	RADIATOR FAN CONTROL SYSTEM
	51	NEUTRAL SW OR CKT (NO SIGNAL) NEUTRAL SW CKT (REMAINS ON)
	52	CLUTCH SW CKT (FWD w/MT ONLY)
	53	HAC SOLENOID OR CIRCUIT FAILURE
	55	EGR SENSOR OR CKT (CA ONLY) EGR GAS TEMP SNSR (CA ONLY)
	56	EGR SYSTEM (CALIF ONLY)
	61	PARKING SW CKT (SW REMAINS ON)
	62	IDLE-UP SYSTEM 1 OR CKT FAILURE
	63	IDLE-UP SYSTEM 2 OR CKT FAILURE

YEAR: 1990	DTC NO.	DESCRIPTOR
1990	1	SPEC CODE MT/49ST/CAN SPEC CODE FWD/MT/49ST/CAN
	2	SPEC CODE FWD/ECVT/49ST/CAN SPEC CODE MT/CAL
	3	SPEC CODE 4WD/MT/49ST/CAN SPEC CODE AT/49ST/CAN
	4	SPEC CODE 4WD/ECVT/49ST/CAN SPEC CODE AT/CAL
	5	SPEC CODE MT/FED/CAN
	6	SPEC CODE MT/CAL
	7	SPEC CODE AT/FED/CAN
	8	SPEC CODE AT/CAL
	10	SPEC CODE FWD/MT/CAL
	11	CRANK ANGLE SNSR REF PULSE OR CKT CKP SENSOR OR CKT (CAM SIG OK) CKP SNSR OR CKT (START SIG OK)
	12	STARTER SW POS. ON/OFF FAILURE STARTER SWITCH IGN SIG FAILURE. STARTER SW ON/OFF (CRANKING)
	13	CYL DISTINCTION SNSR(CKP SIG OK) CKP SNSR OR CKT (CRANK SIG OK) CKP SENSOR OR CIRCUIT FAILURE.
	14	FUEL INJ. 1 OR CIRCUIT FAILURE FUEL INJ. OUTPUT OR CKT FAILURE DUTY SOLENOID VALVE OR CKT FUEL INJ. 1 & 2 OR CKT FAILURE
	15	FUEL INJ. 2 OR CKT FAILURE CFC SYSTEM OR CIRCUIT FAILURE FUEL INJ. 3 & 4 OR CKT FAILURE
	16	FUEL INJ. 3 OR CKT FAILURE FEEDBACK SYSTEM OR CKT FAILURE
	17	FUEL INJ. 4 OR CKT FAILURE FUEL PUMP AUTO CHOKE OR CKT
	20	SPEC CODE FWD/ECVT/CAL
	21	WATER TEMP. SNSR SIGNAL OR CKT WATER TEMP. SNSR OR CKT FAILURE
	22	KS SNSR MONITOR CKT VOLTAGE VLC SOLENOID VALVE OR CKT KS OR KS CIRCUIT FAILURE

YEAR: 1990 (CONTINUED)	DTC NO.	DESCRIPTOR
	23	PRESSURE SENSOR OR CKT FAILURE AIR FLOW METER OR CKT FAILURE AIR FLOW SNSR. SIGNAL VOLTAGE
	24	ISC SOL. VALVE CKT VOLTAGE AIR CONTROL VLV OR CKT FAILURE AIR CONTROL VLV MON CKT VOLTAGE IDLE UP SOLENOID OR CKT FAILURE
	25	FCV SOLENOID OR CIRCUIT FAILURE
	26	AIR TEMP. SENSOR OR CKT FAILURE
	30	SPEC CODE 4WD/MT/CAL
	31	THROTTLE SENSOR OR CKT FAILURE THROTTLE SENSOR VOLTAGE OR CKT
	32	O2 SENSOR OR CIRCUIT FAILURE O2 SNSR VOLTAGE OR CKT FAILURE
	33	VSS OR CIRCUIT (NO SIGNAL) VSS VOLTAGE OR CIRCUIT FAILURE
	34	EGR SOL VALVE ON/OFF OR CKT EGR LINE CLOGGED OR EGR CKT (CA)
	35	CPC SOL MONITOR CKT VOLTAGE PURGE SOL VALVE ON/OFF OR CKT PURGE SOL VALVE OR CKT FAILURE
	36	IGNITER MONITOR CKT VOLTAGE
	40	SPEC CODE 4WD/ECVT/CAL
	41	AFR ADAPTIVE LEARN CONTROL SYSTEM LEAN CONDITION
	42	IDLE SWITCH SIGNAL OR CKT IDLE SWITCH VOLTAGE SIGNAL IDLE SWITCH OR CIRCUIT FAILURE
	43	POWER SWITCH SIGNAL OR CKT
	44	WASTEGATE CONTRL SOL. OR CIRCUIT
	45	BARO SENSOR OR CIRCUIT FAILURE BARO SENSOR FAILURE KDWN CONTROL RLY (ON/OFF POS.)
	46	RADIATOR FAN CONTROL SYSTEM
	49	AIR FLOW SENSOR OR CKT FAILURE
	51	NEUTRAL SW CKT (REMAINS ON) NEUTRAL SW OR CKT (NO SIGNAL) AT INHIBITOR SWITCH OR CKT
	52	CLUTCH SW CKT (FWD w/MT/ECVT) PARKING SWITCH OR CKT FAILURE

YEAR: 1990 (CONTINUED)	DTC NO.	DESCRIPTOR
	53	HAC SOLENOID OR CKT FAILURE
	55	EGR GAS TEMP. SENSOR (CA ONLY)
	61	PARKING SWITCH (REMAINS ON)
	62	ELEC LOAD SIGNAL (HDLP/REAR DEF) IDLE-UP SYSTEM 1 OR CKT FAILURE
	63	BLOWER FAN SW (REMAINS ON/OFF) IDLE-UP SYSTEM 2 OR CKT FAILURE
	65	VACUUM PRESSURE SENSOR OR CKT

YEAR: 1991	DTC NO.	DESCRIPTOR
1991	1	SPEC CODE MT/FED/2700cc SPEC CODE MT/FED/NON-TURBO
	2	SPEC CODE MT/CA/2700cc SPEC CODE MT/CA/NON-TURBO
	3	SPEC CODE AT/FED/CAN SPEC CODE AT/FED/2700cc SPEC CODE AT/FED/CAN/4WD/1800cc SPEC CODE AT/FED/NON-TURBO
	4	SPEC CODE AT/CAL SPEC CODE AT/CA/2700cc SPEC CODE AT/CA/4WD/1800cc SPEC CODE AT/CA/NON-TURBO
	5	SPEC CODE MT/FED/CAN SPEC CODE MT/FED/CAN/1800cc SPEC CODE MT/FED/TURBO
	6	SPEC CODE MT/CAL SPEC CODE MT/CA/1800cc SPEC CODE MT/CA/TURBO
	7	SPEC CODE AT/FED/CAN SPEC CODE AT/FED/FWD/1800cc SPEC CODE AT/FED/TURBO
	8	SPEC CODE AT/CAL SPEC CODE AT/CA/FWD/1800cc SPEC CODE AT/CA TURBO
	11	CRANK ANGLE SENSOR CIRCUIT FAILURE
	12	STARTER SWITCH SIGNAL ABNORMAL
	13	CAM ANGLE SENSOR CIRCUIT FAILURE

YEAR: 1991 (CONTINUED)	DTC NO.	DESCRIPTOR
	14	FUEL INJECTOR NO. 1 INOPERATIVE (LEGACY) FUEL INJECTOR OUTPUT OR CIRCUIT FAILURE (LOYALE W/SPFI) FUEL INJECTORS NO. 1 & 2 OR CIRCUIT FAILURE (LOYALE W/MPFI) FUEL INJECTORS NO. 1 & 2, 1800cc (XT) FUEL INJECTORS NO. 5 & 6, 2700cc (XT6)
	15	FUEL INJECTOR NO. 2 INOPERATIVE (LEGACY) FUEL INJECTORS NO. 3 & 4 CIRCUIT FAILURE (LOYALE W/SPFI) FUEL INJECTORS NO. 3 & 4, 1800cc (XT) FUEL INJECTORS NO. 1 & 2, 2700cc (XT6)
	16	INJECTOR NO. 3, INOPERATIVE
	17	INJECTOR NO. 4, INOPERATIVE
	21	WATER TEMP. SENSOR CIRCUIT FAILURE
	22	KNOCK SENSOR CIRCUIT FAILURE
	23	AIR FLOW METER/SENSOR CIRCUIT FAILURE
	24	(BYPASS) AIR CONTROL VALVE CIRCUIT FAILURE
	25	FUEL INJECTORS NO. 3 & 4, CIRCUIT FAILURE
	31	TPS CIRCUIT FAILURE
	32	O2 SENSOR CIRCUIT FAILURE
	33	VSS SIGNAL ABNORMAL
	34	EGR SOLENOID VALVE CONTINUOUSLY ON OR OFF
	35	CANISTER PURGE SYSTEM FAILURE
	41	AIR/FUEL SYSTEM FAILURE
	42	IDLE SWITCH CIRCUIT ABNORMAL
	44	WASTEGATE CONTROL SYSTEM FAILURE
	45	PRESSURE SENSOR/EXCHANGE SOLENOID VALVE FAILURE (LEGACY TURBO) ATMOSPHERIC PRESSURE SENSOR FAULTY (LEGACY NON-TURBO) KICK-DOWN CONTROL RELAY FAILURE, CONTINUOUSLY ON OR OFF (LOYALE W/SPFI)
	49	AIR FLOW SENSOR: USE OF IMPROPER SENSOR
	51	NEUTRAL/INHIBITOR SWITCH CIRCUIT FAILURE
	52	PARKING SWITCH SIGNAL ABNORMAL
	55	EGR GAS TEMP. SENSOR, OPEN OR SHORT
	61	PARKING SWITCH CIRCUIT FAILURE, SWITCH CONTINUOUSLY ON

YEAR: 1992	DTC NO.	DESCRIPTOR
1992	11	CRANK ANGLE SENSOR CIRCUIT FAILURE
	12	STARTER SWITCH, ABNORMAL SIGNAL
	13	CAM ANGLE SENSOR CIRCUIT FAILURE
	14	INJECTOR NO. 1 INOPERATIVE
	15	INJECTOR NO. 2 INOPERATIVE
	16	INJECTOR NO. 3 INOPERATIVE
	17	INJECTOR NO. 4 INOPERATIVE
	18	INJECTOR NO. 5 INOPERATIVE
	19	INJECTOR NO. 6 INOPERATIVE
	21	WATER TEMP. SENSOR, ABNORMAL SIGNAL
	22	KNOCK SENSOR, ABNORMAL VOLTAGE IN MONITOR CIRCUIT (LEGACY) KNOCK SENSOR 1, ABNORMAL VOLTAGE IN MONITOR CIRCUIT, RIGHT BANK (SVX)
	23	AIR FLOW SENSOR, ABNORMAL VOLTAGE
	24	BYPASS AIR CONTROL SOLENOID VALVE CIRCUIT FAILURE
	28	KNOCK SENSOR 2, ABNORMAL VOLTAGE IN MONITOR CIRCUIT, LEFT BANK
	29	CRANK ANGLE SENSOR 2, ABNORMAL VOLTAGE IN MONITOR CIRCUIT
	31	THROTTLE SENSOR, ABNORMAL VOLTAGE IN CIRCUIT
	32	O2 SENSOR INOPERATIVE (LEGACY) O2 SENSOR 2, INOPERATIVE, RIGHT BANK (SVX)
	33	VSS 2, ABNORMAL VOLTAGE
	34	EGR SOLENOID VALVE INOPERATIVE
	35	PURGE CONTROL SOLENOID VALVE INOPERATIVE
	37	O2 SENSOR 2, INOPERATIVE, LEFT BANK (SVX)
	38	ENGINE TORQUE CONTROL CIRCUIT, SHORT CIRCUIT
	41	A/F LEARNING CONTROL FAULTY
	42	IDLE SWITCH, ABNORMAL VOLTAGE
	44	WASTEGATE CONTROL SOLENOID VALVE INOPERATIVE

YEAR: 1992 (CONTINUED)	DTC NO.	DESCRIPTOR
	45	ATMOSPHERIC PRESSURE SENSOR FAULTY (LEGACY NON-TURBO) PRESSURE SENSOR/EXCHANGE SOLENOID VALVE FAULTY (LEGACY TURBO) ATMOSPHERIC PRESSURE SENSOR FAULTY, SENSOR IN ECU (SVX)
	49	IMPROPER AIR FLOW SENSOR IN USE
	51	NEUTRAL SWITCH, ABNORMAL SIGNAL (LEGACY M/T) INHIBITOR SWITCH, ABNORMAL SIGNAL (LEGACY A/T) NEUTRAL SWITCH, ABNORMAL SIGNAL FROM PARKING SWITCH (SVX)
	52	PARKING SWITCH, ABNORMAL SIGNAL
	55	EGR GAS TEMP. SENSOR, ABNORMAL SIGNAL
	56	EGR SYSTEM FAILURE (CAL)

YEAR: 1993	DTC NO.	DESCRIPTOR
1993	11	CRANK ANGLE SENSOR FAILURE
	12	STARTER SWITCH, ABNORMAL SIGNAL (LEGACY) STARTER SWITCH, ABNORMAL SIGNAL FROM IGN. SWITCH (SVX) STARTER SWITCH, CIRCUIT FROM ECM TO SWITCH, OPEN OR SHORT (IMPREZA)
	13	CAM ANGLE SENSOR SIGNAL FAILURE
	14	INJECTOR NO. 1 INOPERATIVE
	15	INJECTOR NO. 2 INOPERATIVE
	16	INJECTOR NO. 3 INOPERATIVE
	17	INJECTOR NO. 4 INOPERATIVE
	18	INJECTOR NO. 5 INOPERATIVE
	19	INJECTOR NO. 6 INOPERATIVE
	21	ECT SENSOR, ABNORMAL SIGNAL
	22	KNOCK SENSOR, ABNORMAL VOLTAGE IN MONITOR CIRCUIT (LEGACY) KNOCK SENSOR 1, ABNORMAL VOLTAGE IN MONITOR CIRCUIT, RIGHT BANK (SVX)
	23	AIR FLOW SENSOR CIRCUIT FAILURE
	24	(BYPASS) IDLE AIR CONTROL CIRCUIT FAILURE
	28	KNOCK SENSOR 2, ABNORMAL VOLTAGE, LEFT BANK
	29	CRANK ANGLE SENSOR 2, CIRCUIT FAILURE

YEAR: 1993 (CONTINUED)	DTC NO.	DESCRIPTOR
	31	THROTTLE SENSOR CIRCUIT FAILURE
	32	O2 SENSOR INOPERATIVE (LEGACY) O2 SENSOR 1 INOPERATIVE, RIGHT BANK (SVX) O2 SENSOR OR CIRCUIT OPEN OR SHORT TO ECM (IMPREZA)
	33	VSS CIRCUIT FAILURE
	34	EGR SOLENOID VALVE OR CIRCUIT FAILURE
	35	PURGE CONTROL VALVE OR CIRCUIT FAILURE
	36	AIR SUCTION SOLENOID VALVE OR CIRCUIT FAILURE
	37	O2 SENSOR 2 INOPERATIVE, LEFT BANK
	38	ENGINE TORQUE CONTROL CIRCUIT, SHORT FROM ECU TO TCU
	41	A/F LEARNING CONTROL FAULTY
	42	IDLE SWITCH, ABNORMAL VOLTAGE
	44	WASTEGATE CONTROL SOLENOID VALVE INOPERATIVE
	45	ATMOSPHERIC PRESSURE SENSOR FAULTY (LEGACY NON-TURBO) PRESSURE SENSOR/EXCHANGE VALVE FAULTY (LEGACY TURBO) ATMOSPHERIC PRESSURE SENSOR FAULTY, SENSOR IN ECU (SVX)
	49	IMPROPER AIR FLOW SENSOR IN USE
	51	NEUTRAL SWITCH, ABNORMAL SIGNAL (SVX) INHIBITOR SWITCH, ABNORMAL SIGNAL (A/T) NEUTRAL POSITION SWITCH, ABNORMAL SIGNAL (M/T)
	52	PARKING SWITCH, ABNORMAL SIGNAL
	55	EGR GAS TEMP. SENSOR, ABNORMAL SIGNAL, SENSOR FAILURE
	56	EGR SYSTEM, VALVE OR HOSE MALFUNCTION

YEAR: 1994	DTC NO.	DESCRIPTOR
1994	11	NO CRANK ANGLE SENSOR SIGNAL ENTERED (LEGACY) CRANK SENSOR 1, NO SIGNAL FOR MORE THAN 3 SEC. W/START SWITCH ON (SVX) CRANK POSITION SENSOR, NO SIGNAL, BUT CAM SIGNAL PRESENT (IMPREZA)
	12	STARTER SWITCH, ABNORMAL SIGNAL (LEGACY) STARTER SWITCH, ABNORMAL SIGNAL FROM IGNITION SWITCH (SVX) STARTER SWITCH, ABNORMAL SIGNAL, OR OPEN IN CIRCUIT (IMPREZA)

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	13	NO CAM ANGLE SIGNAL, 2 REVOLUTION SIGNAL FROM CRANK SENSOR (LEGACY) NO CAM ANGLE SIGNAL, SIGNAL FROM CRANK SENSOR 1 (SVX) NO CAM POSITION SIGNAL, CRANK POSITION SIGNAL PRESENT (IMPREZA)
	14	INJECTOR NO. 1 INOPERATIVE
	15	INJECTOR NO. 2 INOPERATIVE
	16	INJECTOR NO. 3 INOPERATIVE
	17	INJECTOR NO. 4 INOPERATIVE
	18	INJECTOR NO. 5 INOPERATIVE
	19	INJECTOR NO. 6 INOPERATIVE
	21	ECT SENSOR OR CIRCUIT FAILURE
	22	KNOCK SENSOR, ABNORMAL VOLTAGE IN MONITOR CIRCUIT (LEGACY) KNOCK SENSOR 1, ABNORMAL VOLTAGE IN MONITOR CIRCUIT, RIGHT BANK (SVX)
	23	AIR FLOW SENSOR, ABNORMAL VOLTAGE
	24	(BYPASS) AIR CONTROL SOLENOID VALVE OR CIRCUIT FAILURE
	28	KNOCK SENSOR 2, ABNORMAL VOLTAGE IN MONITOR CIRCUIT (LEFT BANK)
	29	NO CRANK ANGLE SENSOR 2 SIGNAL, TWO SIGNALS ENTERED FROM CAM SENSOR
	31	THROTTLE SENSOR, ABNORMAL VOLTAGE
	32	O2 SENSOR INOPERATIVE (LEGACY) O2 SENSOR 1 INOPERATIVE, RIGHT BANK (SVX) O2 SENSOR OR CIRCUIT FAILURE (IMPREZA)
	33	VSS 2 CIRCUIT FAILURE
	34	EGR SOLENOID VALVE OR CIRCUIT FAILURE
	35	PURGE CONTROL SOLENOID VALVE OR CIRCUIT FAILURE
	36	AIR SUCTION SOLENOID VALVE FAILURE, OR CIRCUIT OPEN/ SHORT
	37	O2 SENSOR 2 INOPERATIVE, LEFT BANK
	38	ENGINE TORQUE CONTROL, SHORT BETWEEN ECU AND TCU
	41	A/F LEARNING CONTROL FAULTY
	42	IDLE SWITCH, ABNORMAL VOLTAGE
	44	WASTEGATE CONTROL SOLENOID VALVE INOPERATIVE

YEAR: 1994 (CONTINUED)	DTC NO.	DESCRIPTOR
	45	ATMOSPHERIC PRESSURE SENSOR FAULTY (LEGACY NON-TURBO) PRESSURE SENSOR/EXCHANGE SOLENOID VALVE FAULTY (LEGACY TURBO) ATMOSPHERIC PRESSURE SENSOR FAULTY, SENSOR IN ECU (SVX)
	49	IMPROPER AIR FLOW SENSOR IN USE
	51	NEUTRAL SWITCH, ABNORMAL VOLTAGE FROM INHIBITOR SWITCH (SVX) INHIBITOR SWITCH, ABNORMAL SIGNAL (A/T) NEUTRAL POSITION SWITCH, ABNORMAL SIGNAL (M/T)
	52	PARKING SWITCH, ABNORMAL SIGNAL
	55	EGR GAS TEMP. SENSOR FAULTY
	56	EGR SYSTEM FAILURE

YEAR: 1995	DTC NO.	DESCRIPTOR
1995	11	CKP SENSOR OR CIRCUIT FAILURE (SENSOR 1,CAM SIGNAL OK)
	12	STARTER SWITCH SIGNAL FAILURE
	13	CAM ANGLE SENSOR FAILURE
	14	FUEL INJECTOR NO. 1 OR CIRCUIT FAILURE
	15	FUEL INJECTOR NO. 2 OR CIRCUIT FAILURE
	16	FUEL INJECTOR NO. 3 OR CIRCUIT FAILURE
	17	FUEL INJECTOR NO. 4 OR CIRCUIT FAILURE
	18	FUEL INJECTOR NO. 5 OR CIRCUIT FAILURE
	19	FUEL INJECTOR NO. 6 OR CIRCUIT FAILURE
	21	ECT SENSOR OR CIRCUIT FAILURE
	22	KNOCK SENSOR MONITOR CIRCUIT (RIGHT BANK)
	23	AIR FLOW SENSOR SIGNAL VOLTAGE
	24	BYPASS AIR VALVE/IAC CIRCUIT MALFUNCTION
	28	KNOCK SENSOR MONITOR CIRCUIT (LEFT BANK)
	29	CKP SENSOR 2 OR CIRCUIT FAILURE (CAM SIGNAL OK)

YEAR: 1995 (CONTINUED)	DTC NO.	DESCRIPTOR
	31	TPS SIGNAL/VOLTAGE OR CIRCUIT FAILURE
	32	O2 SENSOR (RIGHT BANK) INOPERATIVE
	33	VSS 2 OR CIRCUIT FAILURE
	34	EGR SOLENOID VALVE OR CIRCUIT FAILURE
	35	PURGE SOLENOID VALVE OR CIRCUIT FAILURE
	36	AIR SUCTION VALVE OR CIRCUIT FAILURE
	37	O2 SENSOR (LEFT BANK) INOPERATIVE
	38	ENGINE TORQUE CONTROL, ECM/TCM CIRCUIT
	41	AIR/FUEL CONTROL, LEAN FAILURE
	52	PARKING SWITCH SIGNAL
	44	WASTEGATE SOLENOID CONTROL VALVE
	45	BARO SENSOR OR CIRCUIT FAILURE
	49	AIR FLOW SENSOR OR CIRCUIT FAILURE
	51	NEUTRAL/INHIBIT SWITCH SIGNAL OR CIRCUIT FAILURE
	52	PARKING SWITCH SIGNAL
	55	EGR TEMP. SENSOR OR CIRCUIT
	56	EGR SYSTEM MALFUNCTION
	61	FUEL TANK PRESSURE SOLENOID VALVE OR CIRCUIT
	62	FUEL TEMP. SENSOR OPEN/SHORT CIRCUIT
	63	FUEL TANK PRESSURE SENSOR OR CIRCUIT

OBD II SYSTEMS

YEAR: 1995-98	DTC NO.	DESCRIPTOR
1995-98 OBD II	P0100	MAF Sensor Circuit Malfunction
	P0101	MAF Sensor Range/Performance Problem
	P0102	MAF Sensor Circuit, Low Input
	P0103	MAF Sensor Circuit, High Input
	P0105	Pressure Sensor Circuit Malfunction
	P0106	Pressure Sensor Circuit Range/Performance Problem
	P0107	Pressure Sensor Circuit, Low Input
	P0108	Pressure Sensor Circuit, High Input
	P0115	ECT Sensor, Circuit Malfunction
	P0116	ECT Sensor, Low Input
	P0117	ECT Sensor, High Input
	P0117	ECT Sensor, Low Input (1998 Only)
	P0118	ECT Sensor, High Input
	P0120	TPS Circuit Malfunction
	P0121	TPS Circuit Range/Performance Problem
	P0122	TPS Circuit, Low Input
	P0123	TPS Circuit, High Input
	P0125	Coolant Temp. Low, No Closed Loop Fuel Control
	P0130	O2S Circuit Malfunction, Bank 1 Sensor 1
	P0133	O2S Circuit, Slow Response, Bank 1 Sensor 1
	P0135	Front O2 Sensor 1 Circuit, Slow Response
	P0136	Front HO2 Sensor 1, Circuit Malfunction
	P0139	Rear O2 Sensor, Slow Response
	P0141	Rear HO2 Sensor, Circuit Malfunction
	P0142	Front O2 Sensor 2, Circuit Malfunction
	P0145	Front O2 Sensor 2, Slow Response
	P0147	Front HO2 Sensor 2, Circuit Malfunction
	P0170	Fuel Trim Malfunction
	P0180	Fuel Temp. Sensor A, Circuit Malfunction

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0181	Fuel Temp. Sensor A, Circuit Range/Performance
	P0182	Fuel Temp. Sensor A Circuit, Low Input
	P0183	Fuel Temp. Sensor A Circuit, High Input
	P0201	Fuel Injector No. 1, Circuit Malfunction
	P0202	Fuel Injector No. 2, Circuit Malfunction
	P0203	Fuel Injector No. 3, Circuit Malfunction
	P0204	Fuel Injector No. 4, Circuit Malfunction
	P0205	Fuel Injector No. 5, Circuit Malfunction
	P0206	Fuel Injector No. 6, Circuit Malfunction
	P0261	Fuel Injector Circuit No. 1, Low Input
	P0262	Fuel Injector Circuit No. 1, High Input
	P0264	Fuel Injector Circuit No. 2, Low Input
	P0265	Fuel Injector Circuit No. 2, High Input
	P0267	Fuel Injector Circuit No. 3, Low Input
	P0268	Fuel Injector Circuit No. 3, High Input
	P0270	Fuel Injector Circuit No. 4, Low Input
	P0271	Fuel Injector Circuit No. 4, High Input
	P0301	Cylinder No. 1, Misfire Detected
	P0302	Cylinder No. 2, Misfire Detected
	P0303	Cylinder No. 3, Misfire Detected
	P0304	Cylinder No. 4, Misfire Detected
	P0305	Cylinder No. 5, Misfire Detected
	P0306	Cylinder No. 6, Misfire Detected
	P0325	Knock Sensor Circuit 1
	P0335	Crankshaft Position Sensor No. 1, Circuit Malfunction
	P0336	Crankshaft Position Sensor, Circuit Out of Range
	P0340	Camshaft Position Sensor, Circuit Malfunction
	P0341	Camshaft Position Sensor Circuit, Range/Performance
	P0385	Crankshaft Position Sensor 2, Circuit Malfunction
	P0400	EGR Flow, System Malfunction
	P0403	EGR Solenoid Circuit, Malfunction
	P0410	Secondary Air Injection System Malfunction

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0412	Secondary Air Injection Switching Valve Malfunction
	P0420	Catalyst Efficiency Below Threshold
	P0440	EVAP Control System Malfunction
	P0441	EVAP Purge System, Incorrect Flow
	P0443	EVAP System Purge Control Valve Malfunction
	P0446	EVAP System Vent Control Valve Malfunction
	P0450	EVAP System Pressure Sensor Malfunction
	P0451	EVAP System Pressure Sensor Range/Performance Problem
	P0452	EVAP System Pressure Sensor, Low Input
	P0453	EVAP System Pressure Sensor, High Input
	P0461	Fuel Level Sensor Circuit, Range/Performance Problem
	P0462	Fuel Level Sensor Circuit, Low Input
	P0463	Fuel Level Sensor Circuit, High Input
	P0480	Cooling Fan Relay 1 Circuit, Low Input
	P0483	Cooling Fan Function Problem
	P0500	VSS Malfunction
	P0505	Idle Control System Malfunction
	P0506	Idle Control System, RPM Lower Than Expected
	P0507	Idle Control System, RPM Higher Than Expected
	P0600	Serial Communication Link Malfunction
	P0601	Internal Control Module Memory Check Sum Error
	P0703	Brake Input Switch Malfunction
	P0705	Transmission Range Sensor Circuit Malfunction
	P0710	Transmission Fluid Temp. Sensor Malfunction
	P0720	Output Speed Sensor (VSS 1), Circuit Malfunction
	P0725	Engine Speed Input Circuit Malfunction
	P0731	Gear 1, Incorrect Ratio
	P0732	Gear 2, Incorrect Ratio
	P0733	Gear 3, Incorrect Ratio
	P0734	Gear 4, Incorrect Ratio
	P0740	Torque Converter Clutch System Malfunction
	P0743	Torque Converter Clutch System, Electrical Problem

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P0748	Pressure Control Solenoid, Electrical Problem
	P0753	Shift Solenoid A, Electrical Problem
	P0758	Shift Solenoid B, Electrical Problem
	P0760	Shift Solenoid C, Malfunction
	P0763	Shift solenoid C, Electrical Problem
	P1100	Starter Switch Circuit Malfunction
	P1101	Neutral Position Switch, Circuit Malfunction
	P1102	Pressure Sources Switching Solenoid Valve, Circuit Malfunction
	P1103	Engine Torque Control Signal Circuit Malfunction
	P1104	TCS signal Circuit Malfunction
	P1107	Air Injection System Diagnosis Solenoid Valve Circuit
	P1108	Induction Control Solenoid Valve Circuit
	P1120	Starter Switch Circuit, High Input
	P1121	Neutral Position Switch Circuit, Low Input
	P1122	Pressure Sources Switch Solenoid Valve, High Input
	P1124	TCS Signal Circuit, High Input
	P1141	MAF Sensor, Range/Performance Problem, High Input
	P1142	TPS Circuit, Range/Performance Problem, Low Input
	P1143	Pressure Sensor, Range/Performance Problem, Low Input
	P1144	Pressure sensor, Range/Performance Problem, High Input
	P1300	CKP Sensor 2, Circuit Malfunction
	P1400	Fuel Tank Pressure Control Solenoid Valve
	P1401	Fuel Tank Pressure Control System Problem
	P1402	Fuel Level Sensor Circuit Malfunction
	P1420	Fuel Tank Pressure Solenoid Valve, High Input
	P1421	EGR Circuit, High Input
	P1422	EVAP System, Purge Control Valve, High Input
	P1423	EVAP System, Vent Control, High Input
	P1440	Fuel Tank Pressure System, Low Input
	P1441	Fuel Tank Pressure System, High Input
	P1442	Fuel Level Sensor, Range/Performance Problem 2

YEAR: 1995-98 (CONTINUED)	DTC NO.	DESCRIPTOR
	P1443	EVAP System, Vent Control Problem
	P1500	Radiator Fan Relay 1, Circuit Malfunction
	P1501	Radiator Fan Relay 2, Circuit Malfunction
	P1502	Radiator Fan Function Problem
	P1507	Idle Control System Malfunction (Fail-safe)
	P1520	Radiator Fan Relay 1, High Input
	P1540	VSS Sensor 2, Malfunction
	P1700	TPS Circuit Malfunction
	P1701	Cruise Control Set Signal Circuit
	P1702	A/T Diagnosis Input Signal Circuit, Low Input
	P1722	A/T Diagnosis Input Signal Circuit, High Input
	P1742	A/T Diagnosis Input Signal, Circuit Malfunction

TOYOTA

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1. VEHICLES AND SYSTEMS

Using the **Asian Imports Cartridge**, the Toyota vehicles on the following pages can be diagnosed.

MODEL: 1983	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
1983					
CAMRY	2.0L I4	2S-E	EFI	MILCODES	JUMPER
STARLET	1.3L I4	4K-E	EFI	MILCODES	JUMPER
CELICA	2.4L I4	22R-E	EFI	MILCODES	JUMPER
CRESSIDA	2.8L I6	5M-GE	EFI	MANCODES	JUMPER
CELICA SUPRA	2.8L I6	5M-GE	EFI	MANCODES	JUMPER

MODEL: 1984	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
1984					
CAMRY	2.0L I4	2S-E	EFI	MILCODES	JUMPER
CELICA	2.4L I4	22R-E	EFI	MILCODES	JUMPER
CRESSIDA	2.8L I6	5M-GE	EFI	MANCODES	JUMPER
CELICA SUPRA	2.8L I6	5M-GE	EFI	MANCODES	JUMPER
STARLET	1.3L I4	4K-E	EFI	MILCODES	JUMPER
VAN	2.0L I4	3Y-EC	EFI	MILCODES	JUMPER
TRUCK	2.4L I4	22R-E	EFI	MILCODES	JUMPER

MODEL: 1985	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
1985					
CAMRY	2.0L I4	2S-E	EFI	MILCODES	JUMPER
CELICA	2.4L I4	22R-EC	EFI	MILCODES	JUMPER
COROLLA	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
CRESSIDA	2.8L I6	5M-GE	EFI	MILCODES	JUMPER
CELICA SUPRA	2.8L I6	5M-GE	EFI	MILCODES	JUMPER
VAN	2.0L I4	3Y-EC	EFI	MILCODES	JUMPER
TRUCK	2.4L I4	22R-E	EFI	MILCODES	JUMPER

MODEL: 1985 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
TRUCK	2.4L I4	22R-TE	EFI TURBO	MILCODES	JUMPER
4 RUNNER	2.4L I4	22R-E	EFI	MILCODES	JUMPER
4 RUNNER	2.4L I4	22R-TE	EFI TURBO	MILCODES	JUMPER

MODEL: 1986	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
1986					
CAMRY (USA)	2.0L I4	2S-EL	EFI	MILCODES	JUMPER
CAMRY (CANADA)	2.0L I4	2S-EL	EFI	MILCODES	JUMPER
CELICA	2.0L I4	2S-E	EFI	MILCODES	JUMPER
CELICA	2.0L I4	3S-GE	EFI	MILCODES	JUMPER
COROLLA	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
CRESSIDA	2.8L I6	5M-GE	EFI	MILCODES	JUMPER
MR2	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
CELICA SUPRA	2.8L I4	5M-GE	EFI	MILCODES	JUMPER
CELICA SUPRA*	3.0L I6	7M-GE	EFI	MILCODES	JUMPER
VAN	2.2L I4	4Y-EC	EFI	MILCODES	JUMPER
TRUCK	2.4L I4	22R-E	EFI	MILCODES	JUMPER
4 RUNNER	2.4L I4	22R-E	EFI	MILCODES	JUMPER
TRUCK	2.4L I4	22R-TE	EFI TURBO	MILCODES	JUMPER
4 RUNNER	2.4L I4	22R-TE	EFI TURBO	MILCODES	JUMPER

* Vehicle is a 1986.

MODEL: 1987	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
1987					
CAMRY	2.0L I4	3S-FE	EFI	MILCODES	JUMPER
CELICA	2.0L I4	3S-FE	EFI	MILCODES	JUMPER
CELICA	2.0L I4	3S-GE	EFI	MILCODES	JUMPER
COROLLA	1.6L I4	4A-C	CARB	MILCODES	JUMPER

MODEL: 1987 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
COROLLA	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
CRESSIDA	2.8L I6	5M-GE	EFI	MILCODES	JUMPER
MR2	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
SUPRA	3.0L I6	7M-GE	EFI	MILCODES	JUMPER
SUPRA	3.0L I6	7M-GTE	EFI TURBO	MILCODES	JUMPER
VAN	2.2L I4	4Y-E	EFI	MILCODES	JUMPER
TRUCK	2.4L I4	22R	CARB	MILCODES	JUMPER
TRUCK	2.4L I4	22R-E	EFI	MILCODES	JUMPER
TRUCK	2.4L I4	22R-TE	EFI TURBO	MILCODES	JUMPER
4 RUNNER	2.4L I4	22RE	EFI	MILCODES	JUMPER

MODEL: 1988	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
1988					
CAMRY	2.0L I4	3S-FE	EFI	MILCODES	JUMPER
CAMRY ALL-TRAC	2.0L I4	3S-FE	EFI	MILCODES	JUMPER
CELICA	2.0L I4	3S-FE	EFI	MILCODES	JUMPER
CELICA	2.0L I4	3S-GE	EFI	MILCODES	JUMPER
CELICA	2.0L I4	3S-GTE	EFI TURBO	MILCODES	JUMPER
CELICA ALL-TRAC	2.0L I4	3S-GTE	EFI TURBO	MILCODES	JUMPER
COROLLA	1.6L I4	4A-F	CARB	MILCODES	JUMPER
COROLLA	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
COROLLA FX	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
COROLLA FX16	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
CRESSIDA	2.8L I6	5M-GE	EFI	MILCODES	JUMPER
MR2	1.6L I4	4A-GE	EFI	MILCODES	JUMPER
MR2	1.6L I4	4A-GZE	EFI	MILCODES	JUMPER
SUPRA	3.0L I6	7M-GE	EFI	MILCODES	JUMPER
SUPRA	3.0L I6	7M-GTE	EFI TURBO	MILCODES	JUMPER
VAN	2.2L I4	4Y-E	EFI	MILCODES	JUMPER

MODEL: 1988 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL SYST	CODE TYPE	ADAPTER
TRUCK	2.4L I4	22R-E	EFI	MILCODES	JUMPER
4 RUNNER	2.4L I4	22R-E	EFI	MILCODES	JUMPER
TRUCK	2.4L I4	22R-TE	EFI TURBO	MILCODES	JUMPER
4 RUNNER	2.4L I4	22R-TE	EFI TURBO	MILCODES	JUMPER
TRUCK	3.0L V6	3VZ-E	EFI	MILCODES	JUMPER
4 RUNNER	3.0L V6	3VZ-E	EFI	MILCODES	JUMPER
LAND CRUISER	4.0L I6	3F-E	EFI	MILCODES	JUMPER

MODEL: 1989	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
1989					
CAMRY	2.0L I4 2.5L V6	3S-FE 2VZ-FE	PFI PFI	CODES CODES	CHECK CHECK
CELICA	2.0L I4 (ST, GT) 2.0L I4 (GTS) 2.0L TURBO I4 (ALL TRAC)	3S-FE 3S-GE 3S-GTE	PFI PFI PFI	CODES CODES CODES	CHECK CHECK CHECK
COROLLA	1.6L I4 (CA ONLY) 1.6L I4 1.6L I4	4A-F 4A-FE 4A-GE	2V CARB PFI PFI	CODES CODES CODES	CHECK CHECK CHECK
CRESSIDA	3.0L I6	7M-GE	PFI	CODES & DATA	CHECK, TDCL
MR2	1.6L I4 1.6L IR (SC)	4A-GE 4A-GZE	PFI PFI	CODES CODES	CHECK CHECK
SUPRA	3.0L I6 3.0L TURBO I6	7M-GE 7M-GTE	PFI PFI	CODES CODES	CHECK CHECK
TERCEL	1.5L I4 (CA ONLY)	3E	1V CARB	CODES	CHECK
LAND CRUISER	4.0L I6	3F-E	PFI	CODES	CHECK
VAN	2.2L I4	4Y-E	PFI	CODES	CHECK
4RUNNER 2WD & 4WD	2.4L I4 3.0L V6	22R-E 3VZ-E	PFI PFI	CODES CODES	CHECK CHECK
TRUCK 2WD & 4WD	2.4L I4 (CA ONLY) 2.4L I4 3.0L V6	22R 22R-E 3VZ-E	2V CARB PFI PFI	CODES CODES CODES	CHECK CHECK CHECK

MODEL: 1990	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
1990					
CAMRY	2.0L I4	3S-FE	PFI	CODES	CHECK
	2.5L V6	2VZ-FE	PFI	CODES	CHECK
CELICA	1.6L I4	4A-FE	PFI	CODES	CHECK
	2.0L TURBO I4 (ALL TRAC)	3S-GTE	PFI	CODES	CHECK
	2.2L I4	5S-FE	PFI	CODES	CHECK
COROLLA	1.6L I4	4A-FE	PFI	CODES	CHECK
	1.6L I4	4A-GE	PFI	CODES	CHECK
CRESSIDA	3.0L I6	7M-GE	PFI	CODES & DATA	CHECK, TDCL
MR2	1.6L I4	4A-GE	PFI	CODES	CHECK
	1.6L IR (SC)	4A-GZE	PFI	CODES	CHECK
SUPRA	3.0L I6	7M-GE	PFI	CODES	CHECK
	3.0L TURBO I6	7M-GTE	PFI	CODES	CHECK
TERCEL	1.5L I4	3E-E	PFI	CODES	CHECK
	1.5L I4 (CA ONLY)	3E	1V CARB	CODES	CHECK
LAND CRUISER	4.0L I6	3F-E	PFI	CODES	CHECK
4RUNNER 2WD & 4WD	2.4L I4	22R-E	PFI	CODES	CHECK
	3.0L V6	3VZ-E	PFI	CODES	CHECK
TRUCK 2WD & 4WD	2.4L I4 (CA ONLY)	22R	2V CARB	CODES	CHECK
	2.4L I4	22R-E	PFI	CODES	CHECK
	3.0L V6	3VZ-E	PFI	CODES	CHECK

MODEL: 1991	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
1991					
CAMRY	2.0L I4	3S-FE	PFI	CODES	CHECK
	2.5L V6	2VZ-FE	PFI	CODES	CHECK
CELICA	1.6L I4	4A-FE	PFI	CODES	CHECK
	2.0L TURBO I4 (ALL TRAC)	3S-GTE	PFI	CODES	CHECK
	2.2L I4	5S-FE	PFI	CODES	CHECK
COROLLA	1.6L I4	4A-FE	PFI	CODES	CHECK
	1.6L I4	4A-GE	PFI	CODES	CHECK
CRESSIDA	3.0L V6	7M-GE	PFI	CODES & DATA	CHECK, TDCL
MR2	2.0L TURBO I4	3S-GTE	PFI	CODES	CHECK
	2.2L I4	5S-FE	PFI	CODES	CHECK

MODEL: 1991 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
PREVIA	2.4L I4	2TZ-FE	PFI	CODES	CHECK
SUPRA	3.0L I6	7M-GE	PFI	CODES	CHECK
	3.0L TURBO I6	7M-GTE	PFI	CODES	CHECK
TERCEL	1.5L I4	3E-E	PFI	CODES	CHECK
LAND CRUISER	4.0L I6	3F-E	PFI	CODES	CHECK
4RUNNER 2WD & 4WD	2.4L I4	22R-E	PFI	CODES	CHECK
	3.0L V6	3VZ-E	PFI	CODES	CHECK
TRUCK 2WD & 4WD	2.4L I4	22R-E	PFI	CODES	CHECK
	3.0L V6	3VZ-E	PFI	CODES	CHECK

MODEL: 1992	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
1992					
CAMRY	3.0L V6	3VZ-FE	PFI	CODES & DATA	CHECK, TCDL
	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK, TDCL
CELICA	2.0L TURBO I4 (ALL TRAC)	3S-GTE	PFI	CODES & DATA	CHECK
	1.6L I4	4A-FE	PFI	CODES	CHECK
	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK
COROLLA	1.6L I4	4A-FE	PFI	CODES	CHECK
CRESSIDA	3.0L V6	7M-GE	PFI	CODES & DATA	CHECK, TDCL
MR2	2.0L TURBO I4	3S-GTE	PFI	CODES	CHECK
	2.2L I4	5S-FE	PFI	CODES	CHECK
PASEO	1.5L I4	5E-FE	PRI	CODES	CHECK
PREVIA	2.4L I4	2TZ-FE	PFI	CODES	CHECK
SUPRA	3.0L I6	7M-GE	PFI	CODES	CHECK
	3.0L TURBO I6	7M-GTE	PFI	CODES	CHECK
TERCEL	1.5L I4	3E-E	PFI	CODES	CHECK
LAND CRUISER	4.0L I6	3F-E	PFI	CODES	CHECK
4RUNNER 2WD & 4WD	2.4L I4	22R-E	PFI	CODES	CHECK
	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK
TRUCK 2WD & 4WD	2.4L I4	22R-E	PFI	CODES	CHECK
	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK

MODEL: 1993	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
1993					
CAMRY	3.0L V6	3VZ-FE	PFI	CODES & DATA	CHECK, TCDL
	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK, TDCL
CELICA	2.0L TURBO I4 (ALL TRAC)	3S-GTE	PFI	CODES & DATA	CHECK
	1.6L I4	4A-FE	PFI	CODES & DATA	CHECK
	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK
COROLLA	1.6L I4	4A-FE	PFI	CODES & DATA	CHECK
	1.8L I4	7A-FE	PFI	CODES & DATA	CHECK
CRESSIDA	3.0L V6	7M-GE	PFI	CODES & DATA	CHECK, TDCL
MR2	2.0L TURBO I4	3S-GTE	PFI	CODES & DATA	CHECK
	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK
PASEO	1.5L I4	5E-E	PRI	CODES	CHECK
PREVIA	2.4L I4	2TZ-FE	PFI	CODES	CHECK
SUPRA	3.0L I6	2JZ-GE	PFI	CODES & DATA	CHECK, TDCL
	3.0L TURBO I6	2JZ-GTE	PFI	CODES & DATA	CHECK, TDCL
TERCEL	1.5L I4	3E-E	PFI	CODES	CHECK
LAND CRUISER	4.5L I6	1FZ-FE	PFI	CODES & DATA	CHECK
T100	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK
4RUNNER 2WD & 4WD	2.4L I4	22R-E	PFI	CODES & DATA	CHECK
	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK
TRUCK 2WD & 4WD	2.4L I4	22R-E	PFI	CODES & DATA	CHECK
	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK

MODEL: 1994	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
1994					
SUPRA	3.0L I6	2JZ-GE	PFI	CODES & DATA	CHECK, TDCL
	3.0L TURBO I6	2JZ-GTE	PFI	CODES & DATA	CHECK, TDCL
CAMRY	3.0L V6	1MZ-FE	PFI	CODES & DATA	OBD II*
	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK, TDCL
CELICA	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK
	1.8L I4	7A-FE	PFI	CODES & DATA	CHECK
COROLLA	1.6L I4	4A-FE	PFI	CODES & DATA	CHECK
	1.8L I4	7A-FE	PFI	CODES & DATA	CHECK

MODEL: 1994 (CONTINUED)	ENGINE	ENGINE TYPE	FUEL SYST	INFO TYPE	ADAPTER
TERCEL	1.5L I4	3E-E	PFI	CODES	CHECK
MR2	2.0L TURBO I4	3S-GTE	PFI	CODES & DATA	CHECK
	2.2L I4	5S-FE	PFI	CODES & DATA	CHECK
PASEO	1.5L I4	5E-FE	PRI	CODES	CHECK
PREVIA	2.4L I4	2TZ-FE	PFI	CODES	CHECK
LAND CRUISER	4.5L I6	1FZ-FE	PFI	CODES & DATA	CHECK
T100	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK
4RUNNER 2WD & 4WD	2.4L I4	22R-E	PFI	CODES & DATA	CHECK
	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK
TRUCK 2WD & 4WD	2.4L I4	22R-E	PFI	CODES & DATA	CHECK
	3.0L V6	3VZ-E	PFI	CODES & DATA	CHECK

* For Adapter Type OBD II, use the Common Test Modes OBD II Systems section for operating instructions and test mode information.

ELECTRONIC TRANSMISSIONS

Using the Asian cartridge, the following Toyota Electronic Transmission/Transaxle Applications can be diagnosed.

TOYOTA MODEL	TRANSMISSION
SUPRA CRESSIDA TRUCK 4RUNNER T100	A340E
CAMRY	A540E
CAMRY	A541E
CAMRY	A540H
CAMRY CELICA	A240E
CAMRY MR2	A241E
PASEO	A244E
PREVIA	A46DE
COROLLA	A245E
TRUCK 4RUNNER	A340H

2. TOYOTA SPECIFIC INFORMATION

TWO WAYS TO DIAGNOSE TOYOTA

Toyota powertrain diagnosis can be performed with the Asian Imports cartridge installed in a Tech 1, Tech 1A, or Mastertech tester. Additionally, Toyota vehicles can be diagnosed with the aftermarket version of the Toyota OEM level program card software using the Mastertech tester only. Operating instructions and test mode information are available for the OEM level software in the Toyota/Lexus Program Card Operator's Manual.

If you do not have the necessary Program Card and Mastertech tester to perform OEM level diagnostics, you can use the Asian Imports Cartridge for limited model year coverage. The following Toyota section includes the test modes available, how to connect the tester to the vehicle, operating instructions for DTC entry, and the applicable DTCs for each model year.

Parameters that can be displayed by Toyota vehicles, along with a description and states or units/range of each parameter are listed in Section 9.

3. TOYOTA OBD SYSTEMS

Toyota passenger cars and trucks are equipped with On-Board Diagnostic (OBD) systems that operate with engine fuel and emission systems. Toyota OBD include transmission (ECT), antilock brake (ABS), cruise control (CCS), air conditioning (A/C), and airbag (AB). For these systems, Toyota vehicles do not use a multiplexed vehicle network, and as a result the separated systems accompany engine OBD systems, with each additional system ECU having its own diagnostic trouble code (DTC) output line. In addition, engine ECUs support serial data communications. Following is information about each Toyota OBD system.

ENGINE DATA LIST

Toyota engine serial data list is used to aid in diagnostics for the engine control system. Engine control module, input sensors, input switches, and output actuator data list parameters are provided to the tester by the ECU, via a serial data link. Toyota ECUs update this information at 1.3 seconds/update. Not all Toyota vehicles support data list, and in some cases where the tester has determined that a system is inactive and the data list selection is displayed, data list may still not be supported. If a vehicle has a TDCL and Check DLC, Data List may only be supported on the TDCL DLC. This is a function of the data link connector, so make sure that you are connected to the correct DLC for data list information. Review the Toyota application matrix, column titled Information Type, for the availability of serial data on the vehicle being tested.

ENGINE DTCS

Toyota engine DTCs are available on Toyota vehicles with electronic engine control. Engine DTCs are set by the engine ECU when problems with, but not limited to, the ECU, air- fuel ratio, throttle position, and air pump control are detected. In addition, Toyota engine ECUs can be commanded to a sensitive test mode, which is found in the Sensitive Test (this test triggers the engine ECU into a sensitive mode which detects engine DTCs using a test structure that is less stringent to DTC detection). The Asian Imports application cartridge supports reading engine DTCs automatically or manually, depending on the state (active or inactive) of the engine system.

ELECTRONICALLY CONTROLLED TRANSMISSION DTCS

Toyota ECT DTCs are available on select Toyota vehicles with an ECT (refer to the factory service manual for the transmission type for the vehicle you are testing). ECT DTCs are set by the ECT ECU when problems with, but not limited to, the ECU, ATF temperature, accumulator control solenoid, and shift control solenoid(s) are detected. The Asian Imports application cartridge supports reading ECT DTCs automatically or manually, depending on the state (active or inactive) of the ECT system.

ANTILOCK BRAKE DTCS

Toyota ABS DTCs are available on select Toyota vehicles equipped with ABS. ABS DTCs are set by the ABS ECU when problems with, but not limited to, the ECU, shorted pump motor relay, low brake fluid level, and pressure sensor problems are detected. The Asian Imports application cartridge supports reading ABS DTCs automatically or manually, depending on the state (active or inactive) of the ABS system.

CRUISE CONTROL DTCS

Toyota CCS DTCs are available on select Toyota vehicles with automatic cruise control. CCS DTCs are set by the CCS ECU when problems with, but not limited to, the ECU, actuator malfunction, and cruise control switch problems are detected. The Asian Imports application cartridge supports reading CCS DTCs automatically or manually, depending on the state (active or inactive) of the CCS system.

AIR CONDITIONING DTCS

Toyota A/C DTCs are available on select Toyota vehicles with automatic air conditioning. A/C DTCs are set by the A/C ECU when problems with, but not limited to, the ECU, room temperature sensor, and air mix door problems are detected. Note that on some Toyota vehicles the A/C system does not support a dashboard MIL. The Asian Imports application cartridge supports reading A/C DTCs automatically or manually, depending on the state (active or inactive) of the A/C system.

AIR BAG DTCS

Toyota AB DTCs are available on select late model Toyota vehicles equipped with the airbag system. AB DTCs are set by the AB ECU when problems with, but not limited to, the ECU, squib malfunction, and warning light circuit problems are detected. The Asian Imports application cartridge supports reading AB DTCs automatically or manually, depending on the state (active or inactive) of the AB system.

A NOTE ABOUT THE MIL

On some of the above systems, the ECU DTC output line is routed to the dashboard mounted system MIL, which flashes out the DTC when the ECU is commanded to the diagnostic mode. In this case, the tester is connected to the vehicle DLC to command the ECU for the system under test into the diagnostic mode. When that process is started, the DTC can be read from the MIL. The DTC can then be entered into the tester for a description. Refer to Section 6, Selecting the Vehicle, System Inquiry, for more information on Inactive system detection.

Which systems are covered by the Asian Imports application cartridge software on the vehicle you are testing?

In order to take advantage of all possible systems available on the vehicle, the Asian Imports application cartridge incorporates an advanced system inquiry strategy that identifies the systems on the vehicle as active or inactive. Some Toyota vehicles can have a single active system, where others can have up to six. So the best possible way to identify the systems on your vehicle is to connect the tester to the Check and TDCL DLCs to determine the available active systems. Refer to Section 6, Selecting the Vehicle, System Inquiry, for more information on Inactive system detection.

The following chart lists Toyota ECUs that can be tested using the Asian Imports Cartridge, the test modes available for each system, and the DLC Cable adapter required. Not all vehicles are equipped with every ECU.

ECU	DATA LIST	DTC(S)	SNAPSHOT	ADAPTER
ENGINE	*	*	*	TDCL/CHECK
ECT		*		TDCL
ABS		*		TDCL
CCS		*		TDCL
A/C		*		TDCL
AIRBAG		*		CHECK

NOTE

If you are using the Asian Imports Cartridge with a TECH 1 tester, the available Toyota OBD systems will be limited to Engine Data List, Engine DTCs, and Transmission DTCs. Also, you will need a different TECH 1 14/15 Pin DLC Cable (P/N 02001980) which can be used with the Toyota/Lexus Check Adapter Cable (P/N 02001896) or the Toyota/Lexus TDCL Adapter Cable (P/N 02001895).

4. TEST MODES AVAILABLE

The following test modes are available when testing Toyota vehicles. Operating instructions for test modes other than DTC ENTRY or DTCs are included in the Common Test Modes OBD, OBD I Systems section. There are also Toyota specific instructions for operating the test modes in Toyota, Section 7.

Mode F0: Data List - (Engine System only, if Engine System is active)

Mode F1: DTC Entry

Submode F0: How To Read
Submode F1: Enter DTC(s)
Submode F2: DTC List
Submode F3: Review DTC(s)
Submode F4: Clear DTC(s)

Mode F2: DTC

Submode F0: How To Read
Submode F1: Read/Enter DTCs (If System is inactive)
Submode F3: Review DTC
Submode F4: Clear DTC(s)
Submode F5: Sensitive DTC (Engine only)

Mode F3: Snapshot - (Engine System only, if Engine System is active)

NOTE

Some Toyota vehicles do not support the option to use “Any DTC” or “Single DTC” as a snapshot trigger.

Mode F5: System Tests

Submode F0: Prep Vehicle

Mode F8: Information

Submode F1: DLC Location
Submode F3: ID Info
Submode F4: DJC Location

5. GETTING STARTED

Before operating the Asian Imports Cartridge with a Toyota vehicle, do the following:

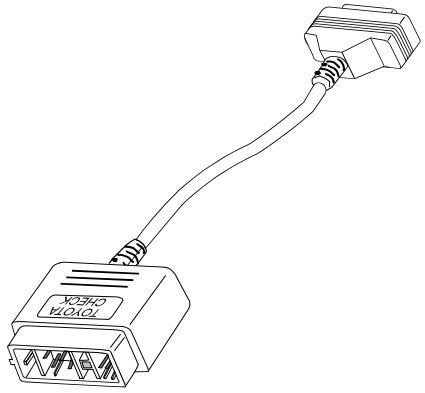
1. Make sure the vehicle ignition is OFF.
2. If the vehicle you are testing is equipped with Overdrive, turn the O/D switch to the ON position.

> **NOTE**
>
> If the O/D switch is not in the ON position, the tester may not be able to read DTCs from the transmission ECU.

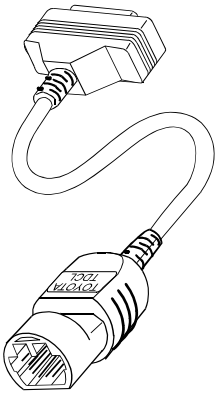
3. When testing a 1989-94 Toyota vehicle, either the Check Adapter Cable or the TDLC Adapter Cable is used to connect the tester to the vehicle DLC. Which adapter cable to use is determined by which system you wish to test. The following chart lists the systems that can be tested with each adapter cable.

ADAPTER	ACTIVE SYSTEMS THAT CAN BE TESTED
CHECK	ENGINE, AIRBAG
TDCL	ENGINE, ECT, ABS, CCS, A/C

Attach the appropriate adapter cable to the end of the tester DLC Cable, then connect the colored end of the cable to the vehicle DLC.



Toyota/Lexus
Check Connector Cable (Blue)



Toyota/Lexus
TDCL Connector Cable (Green)

4a. 1989-94 TOYOTA VEHICLES ONLY:

If the Check connector cable is used, the tester may be powered through the Check connector and it might not be necessary to use the cigarette lighter plug.

If the TDCL connector is used, plug the tester DC Power Cable into the vehicle cigarette lighter.

> **NOTE**
>
> Since the cigarette lighter and Check DLC can be switched, some tests, such as the Sens. DTC Test, require that the power cable be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

4b. 1983-88 TOYOTA VEHICLES ONLY:

Plug the tester power cable into the vehicle cigarette lighter. The power cable may also be directly connected to the battery via the optional battery adapter cable (P/N 02001636).

5. Turn on the tester and select the application software that you will be using. Verify that the correct screen is displayed. The tester should display a screen similar to the one below.

Tester stand-alone display

6. If the display is correct, press **ENTER**. If the display is not correct, refer to Appendix D.
7. Follow the instructions on the following pages to select the vehicle type you are testing.

6. SELECTING THE VEHICLE

Once you've pressed ENTER from the power-up screen, the following steps must be performed to select the manufacturer, model year, model and engine type of the vehicle being tested. Remember, if you make a mistake, you can always press EXIT to go back to the previous menu.

SELECTING THE MANUFACTURER

A menu of manufacturers available for testing is displayed in a self-scrolling menu. You can scroll down one screen at a time by pressing YES, or up one screen at a time by pressing NO. Press ↑ or ↓ to scroll one manufacturer at a time, until the → arrow is opposite Toyota.

Then press ENTER to select.

REPLAY SNAPSHOT DATA

If Snapshot data is stored in the tester memory, the tester asks if you wish to replay saved Snapshot data. Press YES to replay the saved data, or press NO to proceed to the Vehicle Selection displays.

SELECTING THE MODEL YEAR

Once the manufacturer is selected, the Select Model Year menu is displayed. Press the last two digits of the year model being tested; 9, 0 for 1990 models, 9, 1 for 1991 models, and so on.

SELECTING THE MODEL

The Select Model menu displays models available for testing. Press the NO key until the model being tested is displayed, then press the YES key.

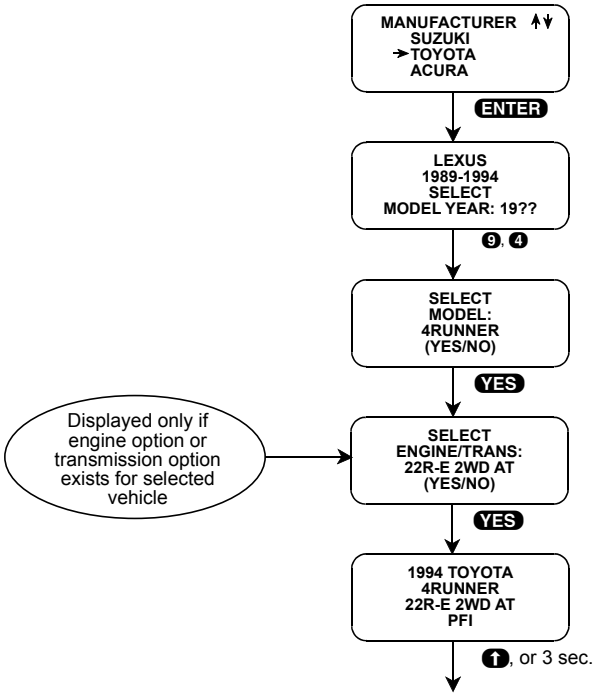
SELECTING THE ENGINE

The Select Engine menu displays available engines for the selected model. Press NO until the engine type of the vehicle is displayed, then press YES.

VEHICLE INFORMATION DISPLAY

After the vehicle type is selected the tester displays a summary screen of the selected vehicle. Information displayed includes the year, manufacturer, model, engine size and type. The tester displays the summary screen for three seconds, then automatically advances to the System Inquiry displays.

If the summary screen is not correct, press EXIT to go backward through the vehicle selection displays until you reach the information that needs to be changed.



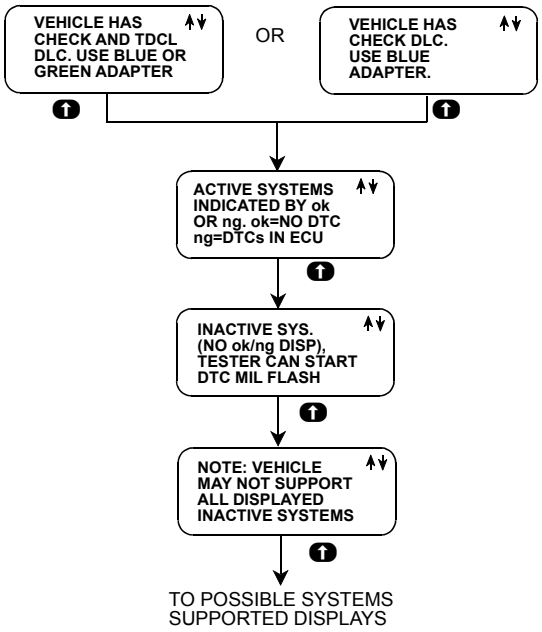
Example of Toyota Vehicle Selection

SYSTEM INQUIRY (1989-94 VEHICLES ONLY)

Once the vehicle type is entered, the tester displays which adapter(s) can be used on the selected vehicle and then displays information screens which describe the operating differences between Active and Inactive Toyota OBD systems. Use the up and down arrows to scroll through the information displays.

If a system is Active, the tester can read DTCs directly from the ECU and show the DTC number and description on the tester display. Active systems are identified in the Select System menu with an “ok”. It is displayed to indicate an active system that does not have DTCs stored in the ECU. “ng” (**n**o **g**ood) is displayed to indicate an active system that does have DTCs stored in the ECU (during the inquiry process the tester determines if the system ECU has stored DTCs or not).

If a system is Inactive, the tester cannot read DTCs directly from the ECU, so the DTCs must be manually read from the dashboard MIL and then entered into the tester using Mode F2, Submode F1: READ/ENTER DTCs. Note that some Inactive systems listed in the Possible System lists may not be supported by the vehicle under test. Inactive systems do not display “ok” or “ng” on the right hand side of the display (see Select System Menu section). The System Inquiry information screens then display possible Active systems available using the Toyota Check or TDCL Data Link Connector(s) (DLCs).

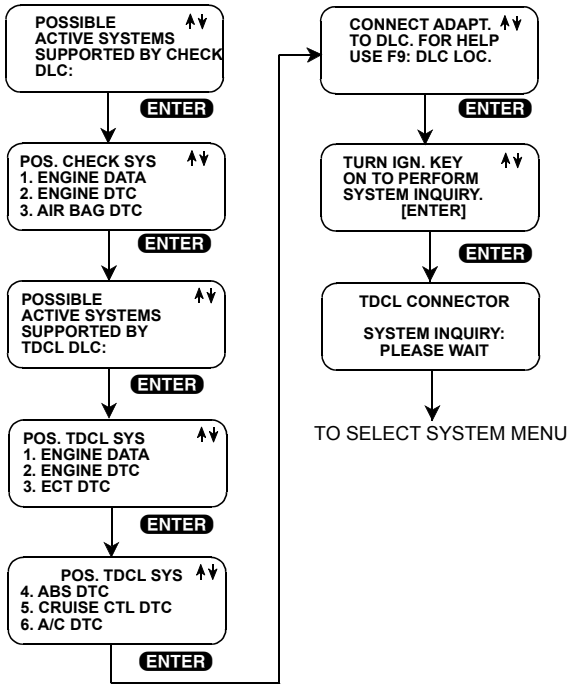

VEHICLE HAS CHECK AND TDCL DLC. USE BLUE OR GREEN ADAPTER
OR
VEHICLE HAS CHECK DLC. USE BLUE ADAPTER.
ACTIVE SYSTEMS INDICATED BY ok OR ng. ok=NO DTC ng=DTCs IN ECU
INACTIVE SYS. (NO ok/ng DISP), TESTER CAN START DTC MIL FLASH
NOTE: VEHICLE MAY NOT SUPPORT ALL DISPLAYED INACTIVE SYSTEMS
TO POSSIBLE SYSTEMS SUPPORTED DISPLAYS

POSSIBLE SYSTEM SUPPORTED DISPLAYS (1989-94 VEHICLES ONLY)

When adapter cable and Active/Inactive information screens have been displayed, the tester instructs you to connect the adapter cable to the tester DLC cable and the vehicle DLC. If you are not sure where the vehicle DLC is located, press **F9** at any time during system inquiry for DLC location information.

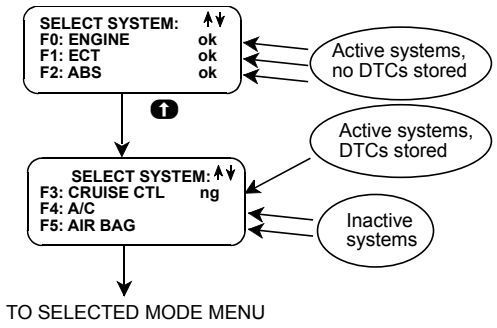
When the tester is connected to the vehicle, turn the ignition key to the ON position, then press **ENTER** to continue with the system inquiry. This portion of the system inquiry can take up to 30 seconds, depending on how many systems are available on the vehicle. The tester lists the systems that can be tested with the installed adapter.

Press ↑ or **ENTER** to continue to the Select System displays.



SELECT SYSTEM MENU

The Select System menu displays the systems available for testing on the selected vehicle. An “ok” next to a system indicates that the system is Active, an “ng” next to a system indicates it is Inactive. Press the function key listed to the left of the system you wish to test to advance to the Select Mode menu.

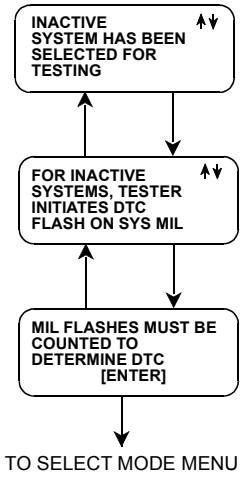


NOTE

If an ECU is malfunctioning and does not communicate with the tester, the ECU will be listed as Inactive in the Select System menu.

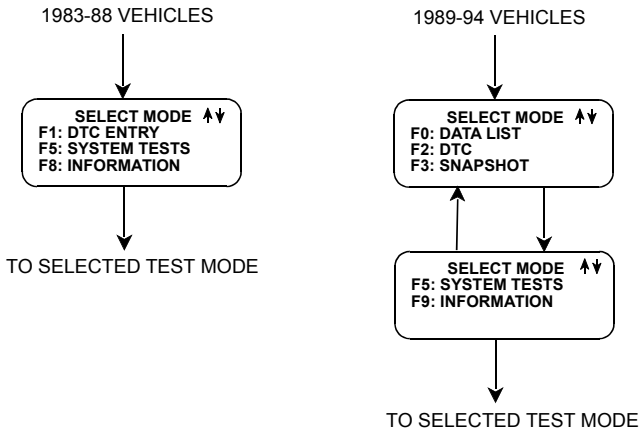
INACTIVE SYSTEM DISPLAYS

If an inactive system has been selected from the Select System Menu, the tester will display information screens. These screens remind you that DTCs will be output on the System MIL (Instrument Panel), and MIL flashes must be counted manually to read DTCs.



SELECT MODE MENU

When the above steps are completed, the Select Mode menu displays the test modes available for the selected vehicle and system. Refer to Section 7 (Test Modes) and the Common Test Modes OBD, OBDI Systems section for operating the test modes with Toyota vehicles. A list of Engine system test modes is shown below.



NOTE

For 1989-94 Toyota vehicles, modes F0: Data List and F3:Snapshot are displayed for engine systems only.

ACTIVE KEYS	
ENTER	Select System displays.
↑ ↓	Scroll up or down display.
EXIT	Return to DTC menu.
F9	Select Test Mode.

7. TEST MODES

The Select Mode menu displays test modes available for the selected vehicle and system. Operating instructions for modes F0: DATA LIST, F2: DTC, and F3: SNAPSHOT are included in the Common Test Modes OBD, OBD I Systems section.

Instructions for selecting and operating mode F1: DTC ENTRY, F2: DTC, Submode F1: READ/ENTER DTCs, and Submode F5: SENSITIVE DTC are included in this section.

Detailed operating instructions for using Mode F1: DTC ENTRY with Toyota vehicles are included in the following procedure.

READING CODES

When Mode F1: DTC ENTRY is selected, the tester displays submodes which, after your selection, provide information on how to read diagnostic trouble codes (DTCs) from the vehicle, how to clear DTCs from the vehicle (or tester memory), obtain a text description of entered or selected DTCs, and review entered or selected DTCs as a result of manually retrieving codes from the ECU.

To read DTCs on 1983-85 Toyota vehicles you must connect the single wire Toyota jumper (P/N 02002076) to the diagnostic jumper connector (DJC), and observe the MIL or analog voltmeter sweeps. To read DTCs on 1986-88 Toyota vehicles you must connect the single wire Toyota jumper (P/N 02002075) to the DJC, and observe the flashing MIL. If you do not know where the DJC is located, select Mode F4: DJC LOCATION from the Information menu. If necessary, refer to Common Test Modes OBD, OBD I Systems section for further instructions.

Follow the detailed instructions on the following pages to manually read the DTCs. Once the DTCs have been manually read from the MIL or analog voltmeter, you can input the DTC into the tester so the tester can define the code. A complete list of Toyota DTCs is also included in Section 8.

MODE F1: DTC ENTRY

This mode is available on 1983-88 Toyota vehicles.

When Mode F1: DTC ENTRY is selected, the tester displays five submodes. Operating instructions for the submodes are on the following pages.

F0: How To Read
F1: Enter DTC(s)
F2: DTC List
F3: Review DTC
F4: Clear DTC(s)

Manually Reading DTCs

To manually read Diagnostic Trouble Codes (DTCs) on Toyota vehicles from 1983-88, there are 2 methods that can be used. The first method is for the 1983-84 Cressida and Celica Supra, which requires an analog voltmeter. Using the analog voltmeter set to a 20 volt scale and connected to the EFI Service connector, and a single wire jumper placed on the Diagnostic Jumper Connector (Check DJC), the DTC can be interpreted from the analog voltmeter needle flashes. The second method requires the use of a single wire jumper that is

placed across 2 pins of the 2 or 17 pin DJC, depending on the model year. In a similar fashion, the DTCs are instead flashed out on the instrument panel mounted Malfunction Indicator Lamp (MIL).

For the automobile manufacturers that mention the use of an analog voltmeter to read manual DTCs, the Mastertech Oscilloscope may be used. Set up the single channel oscilloscope and make connections the same way as the analog voltmeter (above). Choose the 20v/division scale and a slow time/division (e.g. 1-2 sec/division) the DTCs will be shown as a waveform on the display.

Note that manually retrieving DTCs from 1983-88 Toyota vehicles requires you to locate and jumper the Diagnostic Connector. The vehicles that require the use of a jumper are noted in the column “Adapter Type” in the Toyota coverage table (found at the beginning of this section). Refer to the section on manually reading DTCs from the 1983-88 Toyota vehicles in this section.

Submode F0: How To Read

This submode provides information on how to manually read DTCs from the vehicle. Step by step screen instructions provide information to correctly set up the vehicle ECU. This is performed by following the tester instruction screens. If you have trouble, additional DTC retrieval information is described below. If you refer to the factory service manual for this information, make sure that you are following the correct steps for the system you are working on.

Submode F1: Enter DTC(s)

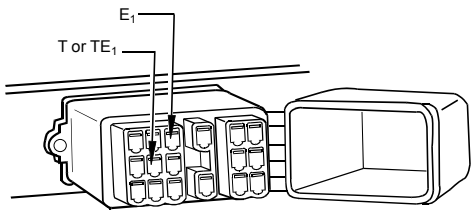
This submode provides you with a description of how to obtain DTC information from the ECU and how to enter this information into the tester. On Toyota vehicles, there is one method to enter manually read DTCs which is the Enter DTC submode.

The Enter DTC submode has two question marks on the tester display for entering the DTC. The tester screen prompts you to enter the DTCs read off the analog voltmeter or the Malfunction Indicator Light (MIL). Be careful when reading the DTC from the analog voltmeter or MIL. Incorrect MIL interpretation can cause the wrong DTC description to be displayed. Once all DTCs have been manually read and recorded, enter each DTC into the tester as described in the Common Test Modes OBD, OBD I Systems section.

Specific instructions for manually reading Toyota analog voltmeter or MIL DTCs are on the following page.

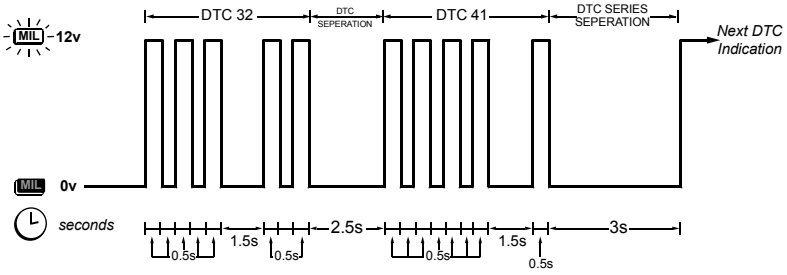
To manually read DTCs From 1986-88 Toyota Vehicles using the Instrument Panel Malfunction Indicator Lamp, do the following:

1. Set the vehicle initial conditions by making sure that battery voltage is 11 volts or more, throttle valve fully closed (throttle position sensor IDL contacts closed), transmission or transaxle in Neutral position, accessories switched OFF engine at normal operating temperature.
2. Turn ignition key to ON, engine OFF.
3. Locate the 17 pin Diagnostic Jumper Connector (press F8: DJC LOCATION from the Information menu for help on DJC location).
4. Jumper T (or TE1) and E1 terminals by connecting the single wire Toyota Jumper (P/N 02002075) to the vehicle's 17 pin DJC.



5. Dashboard MIL will begin flashing DTCs.

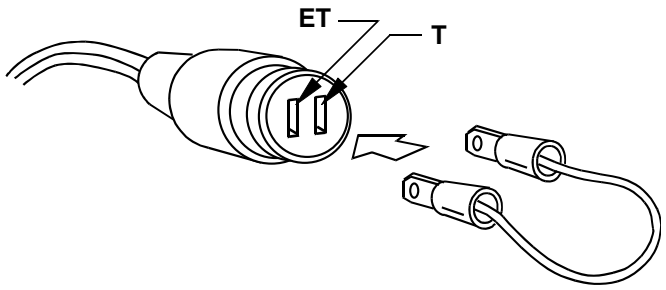
   The first number of MIL flashes will equal the 10's digit of a 2-digit DTC. After a 1.5 second pause, the second number of flashes will equal the 1's digit. If there are 2 or more codes, there will be a 2.5 second pause between each DTC. On a single digit DTC, the MIL will blink a number of times equal to the DTC. Single digit DTCs are separated by a 3.0 or 4.5 second pause. If no DTCs are stored in ECU, MIL will flash normal code.



6. For Toyota vehicles, there are three types of normal code conditions. One is 4 flashes in 1 second (late models), the second is 1 flash in 3.0 seconds, and the third is 1 flash in 4.5 seconds (late models).
7. Disconnect Toyota single wire jumper.
8. Erase DTCs when all repairs are completed.

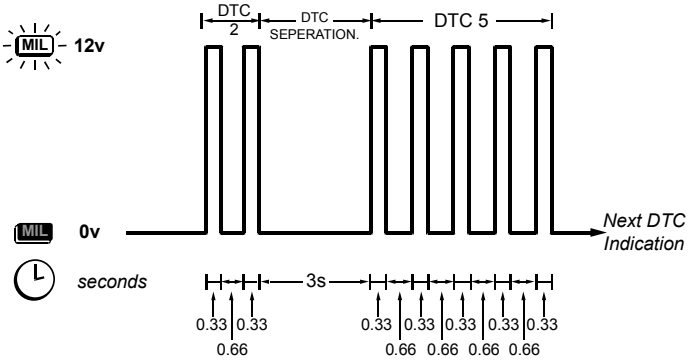
To manually read DTCs From 1983-85 Toyota Vehicles (except 1983-84 Celica Supra and Cressida) using the Instrument Panel Malfunction Indicator Lamp, do the following:

1. Set the vehicle initial conditions by making sure that battery voltage is 11 volts or more, throttle valve fully closed (throttle position sensor IDL contacts closed), transmission or transaxle in Neutral position, accessories switched OFF engine at normal operating temperature.
2. Turn ignition key to ON, engine OFF.
3. Locate the 2 pin Check Diagnostic Jumper Connector (press F8: DJC LOCATION from the Information menu for help on DJC location).
4. Jumper T and E1 terminals by connecting the single wire Toyota Jumper (P/N 02002076) to the vehicle's 2 pin DJC.



5. Dashboard MIL will begin flashing DTCs.

   The first number of MIL flashes will equal the 10's digit of a 2-digit DTC. After a 1.5 second pause, the second number of flashes will equal the 1's digit. If there are 2 or more codes, there will be a 2.5 second pause between each DTC. On a single digit DTC, the MIL will blink a number of times equal to the DTC. Single digit DTCs are separated by a 3.0 or 4.5 second pause. If no DTCs are stored in ECU, MIL will flash normal code.



   All 1983-84 (exc. Cressida and Celica Supra) and selected 1985 vehicles only. Other 1985 have DTC output like that shown in the previous section.

6. For 1983-85 Toyota vehicles, there are two types of normal code conditions. One is 1 flash in 3.0 seconds, and the second is 1 flash in 4.5 seconds.

7. Disconnect Toyota single wire jumper.

8. Erase DTCs when all repairs are completed.

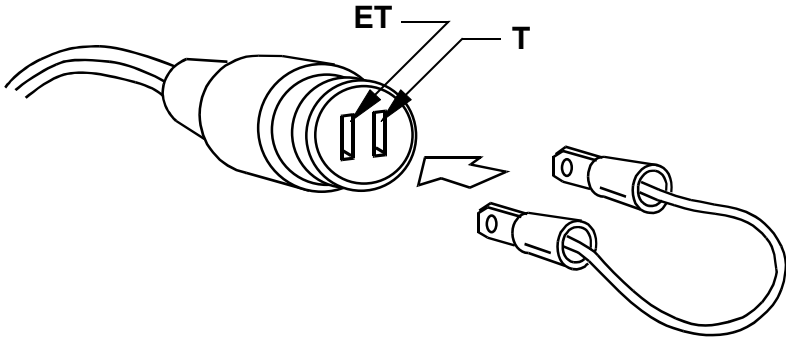
To manually read DTCs From 1983-84 Toyota Cressida and Celica Supra Vehicles using an Analog Voltmeter or Mastertech Oscilloscope, do the following:

1. Set the vehicle initial conditions by making sure that battery voltage is 11 volts or more, throttle valve fully closed (throttle position sensor IDL contacts closed), transmission or transaxle in Neutral position, accessories switched OFF engine at normal operating temperature.

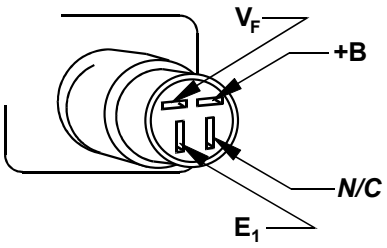
2. Turn ignition key to ON, engine OFF.

3. Locate the 2 pin Check Diagnostic Jumper Connector (press F4: DJC LOCATION from the Information menu for help on DJC location).

4. Jumper T and E1 terminals by connecting the single wire Toyota Jumper (P/N 02002076) to the vehicle's 2 pin DJC.

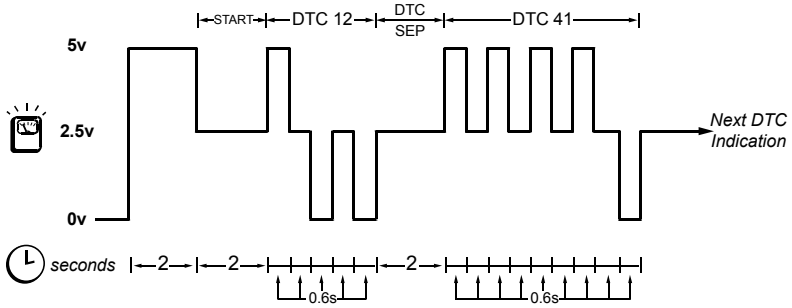


5. Install analog voltmeter to the EFI service connector. Place positive lead (+) on Vf terminal and negative lead (-) on E1 terminal. Set analog voltmeter to 20 volt scale.



6. Analog voltmeter will begin flashing DTCs.

   If DTCs are stored in ECU, there will be a 5 volt indication for 2 seconds followed by a 2.5 volt indication for another 2 seconds. Thereafter, the number of times the needle deflects between 2.5 volts and 5 volts every 0.6 seconds is the first digit (10's) of a 2-digit code. Next, the number of times the needle deflects between 2.5 volts and 0 volts every 0.6 seconds is the second digit (1's) of a 2-digit code. If no DTCs are stored in ECU, MIL will flash normal code.



7. If no malfunctions are present, the voltmeter needle will deflect between 2.5 and 5 volts every 0.6 seconds.
8. Disconnect Toyota single wire jumper.
9. Erase DTCs when all repairs are completed.

Submode F2: DTC List

This submode provides you with a way to view all possible ECU DTCs, including DTC numbers and descriptions You can also select the DTCs obtained from the analog voltmeter or MIL as an alternative way of entering DTCs into the tester's memory. As you scroll through the available DTCs you can view a description of the DTC obtained from the analog voltmeter or MIL. You can “Select” the DTC on the tester screen for later review or printing. Refer to Common Test Modes OBD, OBD I Systems section for further information.

Submode F3: Review DTC(s)

This submode provides a way of reviewing DTCs that you selected or entered into the tester. The description of the entered or selected DTC will be displayed, along with a numerical summary of the entered or selected DTC. Review DTC is intended to provide you with an electronic clipboard that keeps track of the DTCs that you have encountered during diagnosis.

Submode F4: Clear DTC(s)

This submode has two options for you to choose. Option F0 is to view text screens that provide information on how to clear the DTCs from ECU memory. This is performed by tester keypad presses. Option F1 clears the tester memory of DTCs that you entered or selected in the tester. The clear DTC(s) mode is helpful and provides information that you would normally have to locate in a service manual.

MODE F2: DTC

Submode F1: Read/Enter DTC(s)

This submode is available on 1989-94 Toyota Vehicles.

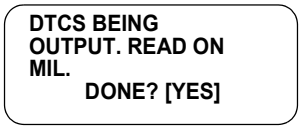
The purpose of the Read/Enter submode is to command the Inactive system ECU to flash DTCs on the dashboard MIL. After the DTC is read from the MIL, a description of the DTCs can then be displayed on the tester screen.

If a Toyota or Lexus system is determined as **Inactive**, the tester will command the ECU to begin flashing the DTC on the system MIL. The F1:READ/ENTER DTC(s) submode displays a message informing you that the tester has initiated DTC flashing on the MIL, and will hold in that mode until you have read the DTC(s) on the MIL.

After the DTC is read from the MIL, the tester screen will change to a DTC entry screen. At that screen, type in the DTC to obtain a description of the DTC.

To access the Read/Enter DTC(s) submode, do the following:

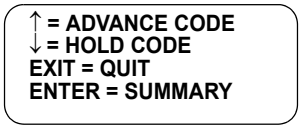
1. Press F2 to select DTCs from the select mode menu.
2. Press F1 to select READ/ENTER DTC(s) from the DTCs menu.
3. The tester displays a message indicating DTCs are being flashed on the MIL. Look at the MIL to read the flashes and determine the DTC. When the DTC cycle is repeated on the MIL and you have recorded the DTC, press YES.



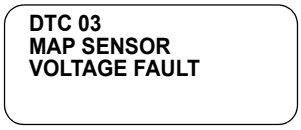
4. Use the tester keypad to enter the DTC displayed on the vehicle system ECU, then press **ENTER**. An example of the Enter DTC display for Toyota vehicles is shown below.

All late model Toyota vehicles with Engine and optional Transmission, ABS, Cruise Control, Air Conditioning, and Airbag systems flash DTCs on the dashboard MIL. On select vehicles, the Air Conditioning system does not have a MIL for DTC reading. DTCs are flashed with the 10's digit first, followed by the 1's digit. There is a 1.5 second period between the 10's and 1's digit, and a 2.5 second period between individual DTCs.

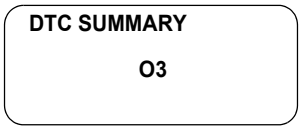
5. When **ENTER** is pressed, the tester displays the DTC number and a short description of the code.
6. After you enter the DTC, the tester asks for additional trouble code entry. Press **YES** to enter another DTC. If **NO** is pressed, the tester displays an instruction screen describing the functions available.



7. Press ↑ to move to the next DTC. If you wish to hold a DTC screen, press ↓ to freeze the automatic scrolling feature.



8. Press **ENTER** to view a summary screen of all entered DTCs.



9. Press **EXIT** to return to the DTC menu.

ACTIVE KEYS	
ENTER	Enter the displayed DTC and display summary screen.
YES	Enter another DTC.
NO	Advance to instruction screen.

ACTIVE KEYS (Continued)	
F0 - F9	Enter DTC number.
↑	Move to the next DTC.
↓	Stop the automatic scrolling.
EXIT	Return to DTC menu.

Submode F5: Sens DTC

This submode is available for 1989-94 Toyota vehicles.

The Sensitive DTC test submode applies to Toyota engine controllers, and is only available when the Engine system is Active.

Toyota engine ECUs have the capability to enter an increased sensitivity mode to detect fault code conditions. The Sens DTC submode is helpful for diagnosing intermittent problems.

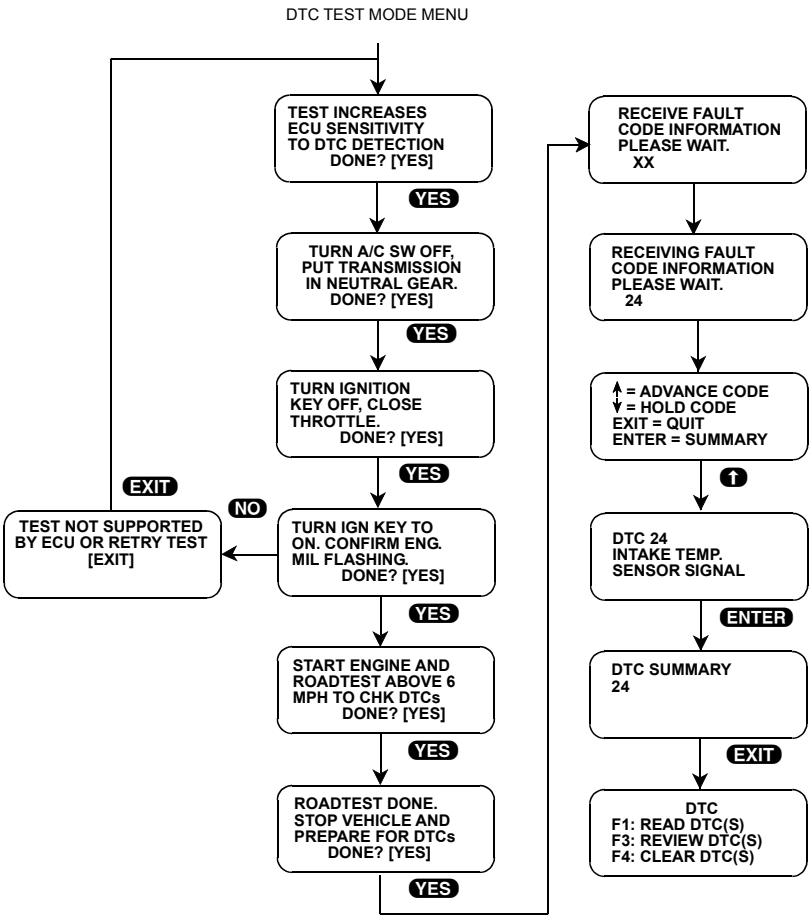
If you are using a TECH 1 or TECH 1A tester, power the tester directly from the battery via the optional battery adapter cable (P/N 02001636).

To access the Sens DTC submode, do the following:

1. Press F2 to select DTCs from the Select Mode menu.
2. Press F5 to select SENS DTC from the DTC menu.
3. The tester displays instructions for preparing the vehicle to capture DTCs in the Sensitive Mode. Follow the instructions on each display, then press YES to continue.
4. When the vehicle preparations are complete, the tester checks for DTCs, then displays the codes on line four.
5. The tester displays instructions for viewing the DTCs. Press ↑ to view the DTCs.
6. The tester displays the first DTC. Press ↑ to scroll through the captured DTCs. A DTC can be held by pressing the ↓ key while the code is displayed. Press the ↓ key to resume display of the DTCs.
7. Press ENTER to display a summary of the captured DTCs.
8. Press EXIT to return to the DTC menu.

NOTE

In some cases, Toyota ECUs do not support Sensitive DTC Mode. If the tester cannot command the ECU into Sensitive DTC Mode, an information screen will be displayed with test status or retry test.


DTC TEST MODE MENU
TEST INCREASES ECU SENSITIVITY TO DTC DETECTION DONE? [YES]
YES
TURN A/C SW OFF, PUT TRANSMISSION IN NEUTRAL GEAR. DONE? [YES]
YES
TURN IGNITION KEY OFF, CLOSE THROTTLE. DONE? [YES]
YES
TURN IGN KEY TO ON. CONFIRM ENG. MIL FLASHING. DONE? [YES]
NO
TEST NOT SUPPORTED BY ECU OR RETRY TEST [EXIT]
EXIT
YES
START ENGINE AND ROADTEST ABOVE 6 MPH TO CHK DTCs DONE? [YES]
YES
ROADTEST DONE. STOP VEHICLE AND PREPARE FOR DTCs DONE? [YES]
YES
RECEIVE FAULT CODE INFORMATION PLEASE WAIT. XX
RECEIVING FAULT CODE INFORMATION PLEASE WAIT. 24
↑ = ADVANCE CODE
↓ = HOLD CODE
EXIT = QUIT
ENTER = SUMMARY
↑
DTC 24 INTAKE TEMP. SENSOR SIGNAL
ENTER
DTC SUMMARY 24
EXIT
DTC
F1: READ DTC(S)
F3: REVIEW DTC(S)
F4: CLEAR DTC(S)

Example of Sensitive DTC Submode Instructions

ACTIVE KEYS	
↑ ↓	Advance to next DTC or hold displayed DTC.
YES	Confirm instructions on display are completed.
NO	Confirm MIL not flashing.
ENTER	Display DTC Summary.
EXIT	Return to DTC Entry menu.

8. TOYOTA DIAGNOSTIC TROUBLE CODES (DTCS)

DTCs available for Toyota vehicles are listed in the following charts.

Some code numbers have different descriptors depending on the selected vehicle. Only codes available for the selected vehicle are displayed by the tester.

YEAR: 1983	DTC NO.	DESCRIPTOR
1983	1	NO DTCs-NORMAL OPERATION
	2	AIR FLOW METER OR CKT FAILURE
	3	AIR FLOW METER OR CKT FAILURE
	4	WATER THERMO SENSOR OR CKT
	5	O2 SENSOR OR CKT FAILURE
	6	IGNITION SIGNAL OR CKT FAILURE
	7	TP SENSOR OR CKT FAILURE TP SENSOR SIG OR CKT (IDL/PSW)
	11	ECU POWER SOURCE (B+) OR CKT
	12	CRANK ANGLE SENSOR OR CKT
	13	CRANK ANGLE SENSOR OR CKT
	14	IGNITION SIGNAL OR CKT FAILURE
	21	O2 SENSOR OR CKT FAILURE
	22	ECT SENSOR OR CIRCUIT FAILURE
	23	IAT SENSOR OR CKT FAILURE
	31	AIR FLOW METER OR CKT FAILURE
	32	AIR FLOW METER OR CKT FAILURE
	41	TP SENSOR OR CKT FAILURE
	42	VEHICLE SPEED SENSOR OR CKT
	43	STARTER SIGNAL OR CKT FAILURE
	51	A/C-ON N/S-OFF DURING DIAG. CK

YEAR: 1984	DTC NO.	DESCRIPTOR
1984	1	NO DTCs-NORMAL OPERATION
	2	AIR FLOW METER OR CKT FAILURE

YEAR: 1984 (CONTINUED)	DTC NO.	DESCRIPTOR
	3	AIR FLOW METER OR CKT FAILURE
	4	WATER THERMO SENSOR OR CKT
	5	O2 SENSOR OR CKT FAILURE
	6	IGNITION SIGNAL OR CKT FAILURE
	7	TP SENSOR OR CKT FAILURE TP SENSOR SIG OR CKT (IDL/PSW)
	11	ECU POWER SOURCE (B+) OR CKT
	12	CRANK ANGLE SENSOR OR CKT
	13	CRANK ANGLE SENSOR OR CKT
	14	IGNITION SIGNAL OR CKT FAILURE
	21	O2 SENSOR OR CKT FAILURE
	22	ECT SENSOR OR CIRCUIT FAILURE
	23	IAT SENSOR OR CKT FAILURE
	31	AIR FLOW METER OR CKT FAILURE
	32	AIR FLOW METER OR CKT FAILURE
	41	TP SENSOR OR CKT FAILURE
	42	VEHICLE SPEED SENSOR OR CKT
	43	STARTER SIGNAL OR CKT FAILURE
	51	A/C-ON N/S-OFF DURING DIAG. CK

YEAR: 1985	DTC NO.	DESCRIPTOR
1985	1	NO DTCs-NORMAL OPERATION
	2	AIR FLOW METER OR CKT FAILURE
	3	AIR FLOW METER OR CKT FAILURE NO IGNITER PULSE (4x) OR CKT FAIL
	4	WATER THERMO SENSOR OR CKT
	5	O2 SENSOR OR CKT FAILURE
	6	IGNITION SIGNAL OR CKT FAILURE NO RPM SIGNAL ABOVE 1000 RPM
	7	TP SENSOR OR CKT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	10	STARTER SIGNAL OR CKT FAILURE

YEAR: 1985 (CONTINUED)	DTC NO.	DESCRIPTOR
	11	A/C-ON TPS-OFF DURING DIAG. CK A/C SW-ON DURING DIAGNOSIS CK MAIN RELAY OR ECU CKT FAILURE
	12	KS OR KS CKT FAILURE NO ECU RPM SIG. DURING CRANKING
	13	KS OR KS CKT FAILURE NO ECU IGN SIG ABOVE 1000 RPM
	14	NO IGNITER SIG. (6x) OR CKT FAIL
	21	O2 SENSOR OR CKT FAILURE
	22	ECT SENSOR OR CIRCUIT FAILURE
	23	IAT SENSOR OR CKT FAILURE
	31	AIR FLOW METER OR CKT FAILURE
	32	AIR FLOW METER OR CKT FAILURE
	41	TP SENSOR OR CKT FAILURE
	42	VEHICLE SPEED SENSOR OR CKT
	43	STARTER SIGNAL OR CKT FAILURE
	51	A/C-ON N/S-OFF DURING DIAG. CK
	52	KS OR KS CKT FAILURE
	53	KS OR KS CKT FAILURE

YEAR: 1986	DTC NO.	DESCRIPTOR
1986	1	NO DTCs-NORMAL OPERATION
	2	AIR FLOW METER OR CKT FAILURE
	3	NO IGNITER PULSE (4x) OR CKT FAIL AIR FLOW METER OR CKT FAILURE
	4	WATER THERMO SENSOR OR CKT
	5	O2 SENSOR OR CKT FAILURE
	6	NO RPM SIGNAL ABOVE 1000 RPM IGNITION SIGNAL OR CKT FAILURE NO RPM SIGNAL ABOVE 1500 RPM ECU NE OR G SIG-IGN/START OR CKT
	7	TP SENSOR OR CKT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	9	VEHICLE SPEED SENSOR OR CKT

YEAR: 1986 (CONTINUED)	DTC NO.	DESCRIPTOR
	10	STARTER SIGNAL OR CKT FAILURE
	11	A/C P/N-ON TPS-OFF DURING DIAG MAIN RELAY OR ECU CKT FAILURE TP SENSOR OR CKT FAILURE A/C-ON TPS-OFF DURING DIAG. CK
	12	NO ECU RPM SIG. DURING CRANKING KS OR KS CKT FAILURE NO ECU NE/G SIG. DURING CRANKING
	13	NO ECU IGN SIG ABOVE 1000 RPM KS OR KS CKT FAILURE NO ECU NE SIG. ABOVE 1000 RPM
	14	NO IGNITER SIG. (6x) OR CKT FAIL ABNORMAL TURBO PRESS-TUR OR AFM
	21	O2 SENSOR OR CKT FAILURE
	22	ECT SENSOR OR CIRCUIT FAILURE
	23	IAT SENSOR OR CKT FAILURE
	24	IAT SENSOR OR CKT FAILURE
	31	AIR FLOW METER OR CKT FAILURE
	32	AIR FLOW METER OR CKT FAILURE
	41	TP SENSOR OR CKT FAILURE
	42	VEHICLE SPEED SENSOR OR CKT
	43	STARTER SIGNAL OR CKT FAILURE
	51	A/C P/N-ON TPS-OFF DURING DIAG A/C-ON N/S-OFF DURING DIAG. CK
	52	KS OR KS CKT FAILURE
	53	ECU OR KS CPU OR CIRCUIT FAILURE

YEAR: 1987	DTC NO.	DESCRIPTOR
1987	1	NO DTCs-NORMAL OPERATION
	2	AIR FLOW METER OR CKT FAILURE
	3	NO IGNITER PULSE (4x) OR CKT FAIL
	4	WATER THERMO SENSOR OR CKT
	5	O2 SENSOR LEAN INDICATION
	6	NO ECU NE SIGNAL DURING CRANK/RUN

YEAR: 1987 (CONTINUED)	DTC NO.	DESCRIPTOR
	7	TP SENSOR OR CKT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	9	VEHICLE SPEED SENSOR OR CKT
	10	STARTER SWITCH SIGNAL FAILURE
	11	11 MAIN RELAY OR ECU CKT FAILURE A/C P/N-ON TPS-OFF DURING DIAG A/C-ON IDLE SW OFF DURING DIAG. TPS-OFF N/S-ON DURING DIAG. CK
	12	NO ECU RPM SIG. DURING CRANKING NO ECU NE/G SIG. DURING CRANKING KS OR KS CKT FAILURE
	13	NO RPM SIGNAL ABOVE 1000 RPM KS OR KS CKT FAILURE
	14	14 NO IGNITER SIG. (4x) OR CKT FAIL NO IGNITER SIG. (4-11x) OR CKT NO IGNITER SIG. (6x) OR CKT FAIL ABNORMAL TURBO PRESS-TUR OR AFM
	21	O2 SENSOR LEAN INDICATION O2 SENSOR OR CKT FAILURE
	22	ECT SENSOR OR CIRCUIT FAILURE
	23	IAT SENSOR OR CKT FAILURE
	24	IAT SENSOR OR CKT FAILURE
	31	AIR FLOW METER OR CKT FAILURE
	32	AIR FLOW METER OR CKT FAILURE HAC SENSOR OR CIRCUIT FAILURE
	34	TURBO PRESSURE MALFUNCTION
	41	TP SENSOR OR CKT FAILURE
	42	VEHICLE SPEED SENSOR OR CKT
	43	STARTER SIGNAL OR CKT FAILURE
	51	A/C P/N-ON TPS-OFF DURING DIAG A/C-ON N/S-OFF DURING DIAG. CK
	52	KS OR KS CKT FAILURE
	53	ECU OR CIRCUIT FAILURE

YEAR: 1988	DTC NO.	DESCRIPTOR
1988	1	NO DTCs-NORMAL OPERATION
	2	AIR FLOW METER OR CKT FAILURE
	3	NO IGNITER PULSE (4x) OR CKT FAIL
	4	WATER THERMO SENSOR OR CKT
	5	O2 SENSOR OR CKT FAILURE
	6	NO ECU NE SIG. ABOVE 1500 RPM
	7	TP SENSOR OR CKT FAILURE
	8	IAT SENSOR OR CKT FAILURE
	10	STARTER SWITCH SIGNAL FAILURE MAIN RELAY OR ECU CKT FAILURE ECU POWER SUPPLY INTERM. FAILURE A/C P/N-ON TPS-OFF DURING DIAG
	12	NO ECU NE/G SIG. DURING CRANKING NO ECU TAC SIG. DURING CRANKING NO ECU NE/G SIG. DURING CRANK/RUN KS OR KS CKT FAILURE
	13	NO ECU NE SIG. ABOVE 1000 RPM NO ECU NE SIG. ABOVE 1500 RPM KS OR KS CKT FAILURE
	14	NO ECU IGF SIG (4-5x) OR CKT FUEL CUTOFF-HIGH TURBO BOOST NO IGNITER SIG. (4-11x) OR CKT NO IGNITER SIG. (8-11x) OR CKT NO IGNITER SIG. (4x) OR CKT FAIL NO IGNITER SIG. (6x) OR CKT FAIL NO ECU IGF SIG. (6-8x) OR CKT
	21	O2 SENSOR LEAN INDICATION O2 SENSOR OR CKT FAILURE O2 SENSOR OR O2 SENSOR HEATER
	22	ECT SENSOR OR CIRCUIT FAILURE ECT SW. TWS1 OR TWS2 CIRCUIT
	23	IAT SENSOR OR CKT FAILURE
	24	IAT SENSOR OR CKT FAILURE
	25	AFR LEAN MALF. FB FREQ. HIGH AFR LEAN MALFUNCTION AFR LEAN MALF. FB COMP. HIGH AFR LEAN MALF.-O2S/FI/ECM/AFH O2 SENSOR LEAN INDICATION

YEAR: 1988 (CONTINUED)	DTC NO.	DESCRIPTOR
	26	AFR RICH MALF. FB FREQ. HIGH AFR RICH MALF. FB COMP. LOW AFR RICH MALF. FB COMP. HIGH O2 SENSOR RICH INDICATION AIR-FUEL RATIO RICH MALFUNCTION AFR RICH MALF. FB FREQ. HIGH AFR RICH MALF. FB COMP. LOW AFR RICH MALF. - EBCV SYSTEM
	27	SUB-O2 SENSOR SIGNAL OR CKT SUB-O2 SENSOR HEATER OR SIGNAL
	28	NO.2 O2 SENSOR/ HEATER OR CKT
	32	AIR FLOW METER OR CKT FAILURE HAC SENSOR OR CIRCUIT FAILURE
	34	TURBO PRESSURE SIG-FUEL CUTOFF
	35	ALTITUDE SENSOR OR CKT FAILURE TURBO PRESSURE SENSOR OR CKT HAC SENSOR OR CIRCUIT FAILURE
	41	TP SENSOR OR CKT (IDL/PSW) FAIL TP SENSOR OR CKT (VTA) FAILURE TP SENSOR OR CKT (THS) FAILURE TP SENSOR OR CKT FAILURE
	42	VEHICLE SPEED SENSOR OR CKT
	43	STARTER SIGNAL OR CKT FAILURE
	51	A/C P/N-ON TPS-OFF DURING DIAG A/C-ON TPS-OFF DURING DIAG. CK A/C-ON IDL NSW-OFF DURING DIAG A/C-ON TPS-OFF DURING DIAG. CK A/C-ON N/S-OFF DURING DIAG. CK A/C-ON IDL+NSW NG DURING DIAG.
	52	KS OR KS CKT FAILURE
	53	ECU OR CIRCUIT FAILURE KS OR KS CKT FAILURE
	54	INTERCOOLER OR SYSTEM FAILURE
	71	EGR SYSTEM MALFUNCTION
	72	FUEL CUT SOL. OR CIRCUIT FAILURE

AIR BAG

YEAR: 1989-94	DTC NO.	DESCRIPTOR
1989-1994	11	SQUIB W/H GND OR FRNT SENS. SHORT
	12	SQUIB W/H +B SHORT
	13	SQUIB MALF. (SHORT)
	14	SQUIB MALF. (OPEN)
	15	FRONT SENSOR W/H OPEN
	22	WARNING LIGHT CIRCUIT
	24	AIRBAG SENSOR CONNECTION FAIL
	31	SENSOR ASSEMBLY
	41	MALF. RECORDED IN MEMORY
	53	SQUIB SHORT
	54	SQUIB OPEN
	63	SQUIB SHORT (PRELOADER LEFT)
	64	SQUIB OPEN (PRELOADER LEFT)
	73	SQUIB SHORT (PRELOADER RT)
	74	SQUIB OPEN (PRELOADER RT)

ANTI-LOCK BRAKE SYSTEM

YEAR: 1989-94	DTC NO.	DESCRIPTOR
1989-1994	11	SOLENOID RELAY OPEN
	12	SOLENOID RELAY SHORT
	13	PUMP MOTOR RELAY OPEN
	14	PUMP MOTOR RELAY SHORT
	15	TRAC BRAKE MAIN RELAY OPEN
	16	TRAC BRAKE MAIN RELAY SHORT
	17	TRAC PUMP MOTOR RELAY OPEN
	18	TRAC PUMP MOTOR RELAY SHORT
	21	RF SOLENOID OPEN OR SHORT
	22	LF SOLENOID OPEN OR SHORT
	23	RR SOLENOID OPEN OR SHORT

YEAR: 1989-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	24	LR SOLENOID OPEN OR SHORT
	25	MASTER CYL. CUT SOL. OPEN/SHORT
	26	ACCUMULATOR CUT SOL. OPEN/SHORT
	27	RESERVOIR CUT SOL. OPEN/SHORT
	31	RF SPEED SENSOR MALFUNCTION
	32	LF SPEED SENSOR MALFUNCTION
	33	RR SPEED SENSOR MALFUNCTION
	34	LR SPEED SENSOR MALFUNCTION
	35	LF/RR SPEED SENS MALFUNCTION
	36	RF/LR SPEED SENS MALFUNCTION
	37	SPD SENSOR ROTOR WHEEL FAILURE
	38	RR SPEED SENSOR MALFUNCTION
	39	LR SPEED SENSOR MALFUNCTION
	41	VOLTAGE MALFUNCTION
	42	HIGH VOLTAGE
	43	TRAC SYS/DECEL. SENSOR MALF.
	44	DECELERATION SENS. OPEN/SHORT
	45	DECELERATION SENSOR MALF.
	46	DECELERATION SENSOR MALF.
	47	DECELERATION SENSOR MALF.
	51	ACTUATOR PUMP MOTOR LOCKED
	53	TRAC MOTOR OVER- OPERATING (DUR.)
	54	TRAC MOTOR OVER- OPERATING (FREQ)
	55	LOW BRAKE FLUID LEVEL
	56	PRESSURE SENSOR OPEN OR SHORT
	57	PRESSURE SENSOR STICKING
	61	TRAC ECU COM. LINE OPEN/SHORT
	62	ECU MALFUNCTION
	71	RF SENSOR LOW VOLTAGE
	72	LF SENSOR LOW VOLTAGE
	73	RR SENSOR LOW VOLTAGE
	74	LR SENSOR LOW VOLTAGE

YEAR: 1989-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	75	RF SENSOR ABNORMAL FREQ.
	76	LF SENSOR ABNORMAL FREQ.
	77	RR SENSOR ABNORMAL FREQ.
	78	LR SENSOR ABNORMAL FREQ.
	79	DECELERATION SENSOR MALF.

AIR CONDITIONING

YEAR: 1989-94	DTC NO.	DESCRIPTOR
1989-1994	11	ROOM TEMP SENSOR OPEN OR SHORT
	12	AMBIENT TEMP. SENS. OPEN/SHORT
	13	EVAPORATOR TEMP. SENS. OPEN/SHORT
	14	WATER TEMP. SENS. OPEN/SHORT
	15	DUCT SENSOR OPEN/SHORT (Dr)
	16	DUCT SENSOR OPEN/SHORT (Pa)
	21	SOLAR SENSOR OPEN/SHORT (Pa)
	22	COMPRESSOR LOCKED
	23	REFRIGERANT PRESS MALFUNCTION
	24	SOLAR SENSOR OPEN/SHORT (Dr)
	31	AIR MIX POSITION SENSOR
	32	AIR INLET POSITION SENSOR
	33	AIR MIX MALF. OR MODE POTEN. SIG.
	34	AIR INLET MALFUNCTION
	35	AIR BYPASS POS. SENSOR (Pr)
	36	WATER VALVE POSITION SENSOR
	41	AIR MIX MALFUNCTION
	42	AIR INLET MALFUNCTION
	43	MODE MALFUNCTION
	44	AIR BYPASS POS. SENSOR (Dr)
	45	AIR BYPASS POS. SENSOR (Pa)
	46	WATER VALVE POSITION SENSOR

CRUISE CONTROL SYSTEM

YEAR: 1989-94	DTC NO.	DESCRIPTOR
1989-1994	11	ACTUATOR MALF. (OPEN OR SHORT)
	12	CC MAG. CLUTCH RELEASE VLV FAIL
	13	POSITION SENSOR (OPEN OR SHORT)
	14	ACTUATOR POS. SENSOR MALF.

YEAR: 1989-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	21	VEHICLE SPD SENS SIGNAL (METER)
	22	VEHICLE SPD SENS SIGNAL (T/M)
	23	SPEED DECREASED 10 mph (16 Km/h)
	31	RESUME SWITCH ALWAYS ON
	32	CONTROL SWITCH GROUND SHORT
	33	SET & RES SW. ON SIMULTANEOUSLY
	34	CONTROL SWITCH OFF MALFUNCTION
	41	MOTOR ACTUATE MALFUNCTION
	42	SOURCE VOLTAGE DROP

ELECTRONIC CONTROLLED TRANSMISSION

YEAR: 1989-94	DTC NO.	DESCRIPTOR
1989-1994	37	DIRECT CLUTCH SPD SENSOR SIG.
	38	ATF TEMP. SENSOR SIGNAL
	41	THROTTLE POSITION SENSOR
	42	SPD SENSOR SIGNAL (METER)
	44	SPEED SENSOR REAR
	46	ACCUMULATOR CONTROL SOLENOID
	61	SPD SENSOR SIGNAL (T/M)
	62	NO.1 SHIFT CONTROL SOLENOID
	63	NO.2 SHIFT CONTROL SOLENOID
	64	LOCK-UP CONTROL SOLENOID
	65	TIMING SOLENOID
	67	OD DIRECT CLUTCH SPD SENSOR SIG.
	68	KICK-DOWN SWITCH
	73	DIFF. LOCK SOLENOID OPEN
	74	DIFF. LOCK SOLENOID OPEN
	76	NO.3 SHIFT CONTROL SOLENOID
	86	ENGINE SPEED SENSOR
	88	COMMUNICATION ERROR (TCM-ECM)

ENGINE

YEAR: 1989-94	DTC NO.	DESCRIPTOR
1989-1994	11	ECU (B+)
	12	RPM SIGNAL (CRANKING)
	13	RPM SIGNAL OR PHASE MALF.
	14	IGNITION SIGNAL (IGF1)
	15	IGNITION SIGNAL (IGF2)
	16	AT CONTROL SIGNAL
	17	G1 SIGNAL
	18	G2 SIGNAL
	21	MAIN O2S SIGNAL (& HEATER) FAIL
	22	COOLANT TEMP. SENSOR SIGNAL
	23	INTAKE TEMP. SENSOR SIGNAL
	24	INTAKE TEMP. SENSOR SIGNAL
	25	AIR-FUEL RATIO LEAN MALFUNCTION
	26	AIR-FUEL RATIO RICH MALFUNCTION
	27	SUB LH O2S SIG. (& HEATER) FAIL
	28	MAIN O2S SIGNAL (& HEATER) FAIL
	29	SUB RH O2S SIG. (& HEATER) FAIL
	31	VAF/MAF METER MAP SENSOR SIG.
	32	VAF METER SIGNAL
	33	IAC MALFUNCTION
	34	TURBO PRESSURE MALFUNCTION
	35	BARO/TURBO PRESS SENSOR SIGNAL
	36	CPS SENSOR
	41	THROTTLE POS. SENSOR SIGNAL
	42	VEHICLE SPEED SENSOR SIGNAL
	43	STARTER SIGNAL
	47	SUB THROTTLE POS. SENSOR SIGNAL
	48	AIR PUMP (EAP) MALFUNCTION
	51	SWITCH CONDITION SIGNAL
	52	KNOCK SENSOR SIGNAL

YEAR: 1989-94 (CONTINUED)	DTC NO.	DESCRIPTOR
	53	KNOCK CONTROL PART IN ECU
	54	INTERCOOLER
	55	KNOCK SENSOR SIGNAL
	56	COOLING FAN PRESSURE SWITCH
	71	EGR SYSTEM MALFUNCTION
	72	AIR CONDITIONER RELAY OPEN
	78	FUEL PUMP CONTROL SIGNAL
	79	FUEL PUMP CONTROL SIGNAL
	81	TCM COMM. (ECT1)
	83	TCM COMM. (ESA1)
	84	TCM COMM. (ESA2)
	85	TCM COMM. (ESA3)

9. DATA LIST PARAMETER DESCRIPTIONS

The Asian Imports Cartridge is capable of displaying a wide variety of ECM parameters in Data List and Snapshot.

This section provides a description of every parameter that can be displayed for Toyota vehicles. Remember, not all models are capable of displaying all parameters. Only parameters available for the selected vehicle are displayed by the tester.

There are two basic types of ECM parameters: discrete and analog. Discrete parameters are 'bits' of information and can be in only one of two distinct states (on/off, open/closed, etc.). Switches and solenoids are examples of discrete parameters. Analog parameters are used to represent quantities and are displayed as a value with appropriate units. Examples of analog parameters include Engine Speed, Coolant Temperature, Oxygen Sensor Voltage, etc.

A/C CLUTCH SIG.

STATES
ON/OFF

Air Conditioning switch status as input to vehicle ECM; based on state of dashboard A/C switch position. ON=A/C commanded on, OFF= A/C commanded off.

AFM OUTPUT A/F METER RATIO

UNITS	RANGE
m^3/h	0 – 255 m^3/h

Air Flow Meter (AFM) output signal sent as an input to vehicle ECM (from the Air Flow Meter) and calculated into cubic meter/hour by the ECM; based on the rate of air flow through the AFM.

AFM OUTPUT A/F METER RATIO

UNITS	RANGE
VOLTS	0 – 5V

Air Flow Meter (AFM) output voltage signal sent to the vehicle ECM from the Air Flow Meter; based on the rate of air flow through the AFM.

AFM SIG. PERIOD

UNITS	RANGE
mS	0 – 66

Time period of Karman-Vortex airflow meter sent as an input to the vehicle ECM from the Karman-Vortex airflow meter; based on the rate of air flow through the KV-AFM

CRANK SIGNAL

STATES
ON/OFF

Crank (starter motor) signal input as sent to vehicle ECU during engine cranking. ON = crank switch on, OFF = crank switch off.

DTC RESULT

STATES
SET/NOT SET

Result of ECM diagnostic self-test which checks for malfunction codes. NOT SET = no diagnostic trouble codes, SET = ECM has detected and stored diagnostic trouble codes.

ENG. COOLANT TEMP (DEGREES)

UNITS	RANGE
DEGREES F	-58 – +260
DEGREES C	-50 – +127

Engine Coolant Temperature input as sent to the vehicle ECM and calculated by the ECM; based on cooling system thermostat condition and engine operation mode.

ENGINE SPEED

UNITS	RANGE
RPM	0 – 10000

Engine Speed signal as input to the vehicle ECU and calculated by the ECU; based on the signal from the distributor pulse generator.

IDLE SWITCH

STATES
ON/OFF

Idle Switch signal status as sent to the vehicle ECM; based on idle switch state in throttle position sensor. ON = switch closed (engine idling), OFF = switch open (engine off-idle).

NOTE: When testing the idle switch make sure the engine is running.

INJECTOR P/W

UNITS	RANGE
mSec	0 – 33

Injector solenoid Pulse Width (on-time) based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

INTAKE AIR PRES.

UNITS	RANGE
mmHg	0 – 1244

Intake Air Pressure/Vacuum signal sent as an input to the vehicle ECM from the MAP/VAC sensor; based on engine load.

INTAKE AIR VOL.

UNITS	RANGE
g/S	0 – 510

Intake Air Volume is a measure of engine intake air volume through the air Flow Meter in grams per second (g/s). The more throttle opening, the greater intake air volume into the engine. This parameter applies to AFM equipped engines only.

ISC DUTY CYCLE

UNITS	RANGE
%	0 – 100

Idle Speed Control (ISC) valve percentage opening based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

ISC VALVE

UNITS	RANGE
STEPS	0 – 215

Idle Speed Control (ISC) valve step based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

KNOCK SIGNAL

STATES
ON/OFF

Knock sensor signal correction as commanded by vehicle ECM; based on engine load and indicates that the ECM advance/retard strategy is controlling ignition timing. ON = correction enabled, OFF = correction disabled.

LEAN MIX SENSOR

UNITS	RANGE
mA	0 – 72

Lean mixture sensor current as input to the vehicle ECM; based on air-fuel ratio (O2 content) of exhaust gases.

LEFT A/F FB

STATES
ON/OFF

Left side air-fuel feedback signal state as commanded by vehicle ECM; based on engine load and left O2 sensor signal inputs to ECM. ON = feedback enabled, OFF = feedback disabled.

LEFT A/F TARGET

UNITS	RANGE
VOLTS	0 – 5V

Target (commanded) air fuel ratio in left-hand exhaust manifold as calculated by vehicle ECM.

LEFT O2S SIGNAL

STATES
RICH/LEAN

Left Oxygen Sensor state flag based on input to vehicle ECU; based on oxygen content in left exhaust stream, RICH = air fuel ratio above 14.7, LEAN = air fuel ratio below 14.7:1.

NEUTRAL SWITCH

STATES
P-N--/-R-DL

Neutral Safety switch status as input to vehicle ECM, based on the current gear selection of the transmission. P-N-- = current gear is PARK or NEUTRAL, -R-DL = current gear is REVERSE, DRIVE, or LOW.

RIGHT A/F FB

STATES
ON/OFF

Right side air-fuel feedback signal state as commanded by vehicle ECM; based on engine load and right O2 sensor signal inputs to ECM. ON = feedback enabled, OFF = feedback disabled.

RIGHT A/F TARGET

UNITS	RANGE
VOLTS	0 – 5V

Target (commanded) air fuel ratio in right-hand exhaust manifold as calculated by vehicle ECM.

RIGHT O2S SIGNAL

STATES
RICH/LEAN

Right Oxygen Sensor state flag based on input to vehicle ECU; based on oxygen content in right exhaust stream, RICH = air fuel ratio above 14.7, LEAN = air fuel ratio below 14.7:1.

SPARK ADVANCE

UNITS	RANGE
DEGREES	-30 – +90

Ignition timing Spark Advance or Retard signal based on output calculated by the vehicle ECU; based on engine load, engine RPM and Throttle Position.

THROTTLE ANGLE

UNITS	RANGE
DEGREES	0 – 125

Angle of throttle plate in throttle body as sent to the vehicle ECM and calculated by the ECM; based on current position of throttle position sensor.

VEHICLE SPEED

UNITS	RANGE
MPH	0 – 125

Vehicle speed signal as input to vehicle ECM and calculated by the ECM; based on vehicle speed sensor input.

APPENDICES

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A. UNDERSTANDING OBD II

WHAT IS OBD II?

The California Air Resource Board (CARB) requires that, by model year 1996, all vehicles sold in California (under 8500 GVWR) contain a certain minimum “On-Board Diagnostic” capability to diagnose emissions-related failures of the engine control system. These diagnostic requirements have been designated as OBD II (On-Board Diagnostics, Phase II) with a goal of monitoring “all of the emissions-related components on-board the vehicle for proper operation.” CARB's intent with the OBD II program is to “permit the State's Inspection and Maintenance Program to evolve into a check of the on-board computer for the presence of Diagnostic Trouble Codes (DTCs); underhood and tailpipe inspections would no longer be required.”

CARB has left the task of defining the Standards and Recommended Practices needed to implement their OBD II requirements to the Society of Automotive Engineers (SAE). The SAE committees that define these documents are made up of worldwide representatives from the vehicle manufacturers, tool manufacturers, service industry, and regulatory agencies, plus other related automotive disciplines. The glossary in Appendix D contains a brief description of the SAE “J” documents which provide these definitions.

Part of the OBD II program is for the vehicle to provide a standard interface for off-board diagnostic test equipment. This standard interface includes a standard test connector (referred to as the J1962 connector), a standard communication protocol (SAE J1850 or ISO9141-2), and a standard set of diagnostic test modes (defined by SAE J1979).

In addition to defining the California-mandated emissions testing requirements, OBD II satisfies the EPA's federal OBD testing requirements through 1998. Therefore, equipment used to access the vehicle's OBD II data can also be used to test vehicles under the federal OBD requirements which are in the process of being implemented in some states.

OBD II SCAN TOOL

Part of the intent of CARB's OBD II program is that a single diagnostic tester can be used to read the diagnostic information from any OBD II-compliant vehicle. A tester which satisfies this requirement can be designated as an **OBD II Scan Tool** and is defined by the SAE document J1978. One of the requirements of the OBD II Scan Tool is that it has to work with any OBD II-compliant vehicle and be able to automatically determine all information required to communicate with the vehicle. The operator does not enter any vehicle-specific information such as the vehicle manufacturer, model year, or engine. The OBD II Scan Tool determines what protocol the vehicle uses, what diagnostic parameters can be read from the vehicle, and what tests are supported by the vehicle.

The SAE Recommended Practice J1978 defines the basic requirements for an OBD II Scan Tool. SAE Recommended Practice J1979 defines the test modes used by both the vehicle and the OBD II Scan Tool to access vehicle information and functions. The following test modes are required for a basic OBD II Scan Tool:

- Display Current Diagnostic Data Parameters (J1979, Mode 1).
- Display Diagnostic Trouble Codes, DTCs (J1979, Mode 3).
- Display Freeze Frame Data captured by the vehicle along with a DTC (J1979, Mode 2).
- Clear DTCs and Freeze Frame Data from the on-board controller's memory (J1979, Mode 4).

- Display results of Oxygen Sensor Monitoring Tests (J1979, Mode 5).
- Display status of the vehicle's on-board Readiness Tests.

In addition to these required OBD II Scan Tool functions, the Vetronix testers provide a number of enhancements to the basic OBD II diagnostic functions:

- Road test support through the capture of sequences of data parameters (Snapshot mode).
- User-selectable parameter list allowing the user to trade off update rate for amount of data.
- Display results of on-board monitoring tests, both Continuous and Non-Continuous (J1979, Modes 6 and 7).
- Print data parameters.
- Displays results for control of on-board system, test, or component (J1979, Mode 8)
- Displays vehicle specific information such as VIN and calibration IDs (J1979, Mode 9)

OBD II COMMUNICATION PROTOCOLS

One of the OBD II requirements is that the vehicle contain a standard serial communication link to off-board test equipment. This “standard” communication link turns out to be three separate links, two defined by the SAE and one defined by ISO:

J1850 10.4K VPW Protocol

Uses a single-wire 7-volt bus communicating at 10,400 bits/second using Variable Pulse Width (VPW) data encoding.

J1850 41.6K PWM Protocol

Uses a two-wire 5-volt bus communicating at 41,600 bits/ second using Pulse Width Modulation (PWM) data encoding.

ISO 9141-2 Protocol

Uses a single-wire 12-volt bus communicating at 10,400 bits/second using UART data encoding.

A vehicle manufacturer can satisfy the OBD II requirements by implementing any one of the three protocols. The OBD II Scan Tool must provide support for all three protocols in order to allow it to communicate with all OBD II vehicles.

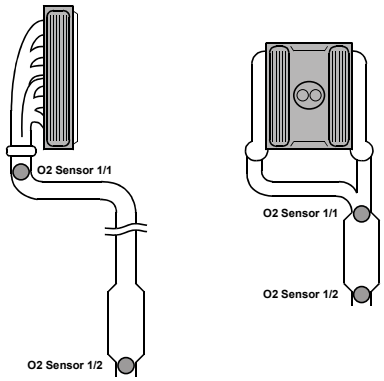
B. OBD II OXYGEN SENSOR LOCATION INFORMATION

OBD II compliant engine management systems use a new naming convention for oxygen sensors (O2S). The need for this sensor convention was required because of the OBD II system's use of a downstream O2S.

O2S location information is divided into cylinder bank and O2S location. Bank 1 contains the sensor that is downstream from the engine cylinder bank which has number 1 cylinder. Bank 2 contains the sensor opposite the cylinder Bank 1.

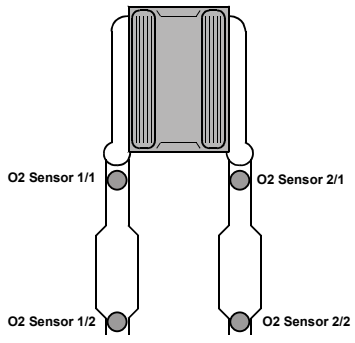
Additionally, O2S location is separated into upstream and downstream, relative to the catalytic converter. For in-line engines and V-configuration engines with Y exhaust systems and one O2S ahead of the catalytic converter, O2S 1 is the upstream sensor and O2S 2 is the downstream sensor. This results in the naming convention bank/location. Examples are:

O2S B1 S1 = bank 1, upstream
O2S B1 S2 = bank 1, downstream



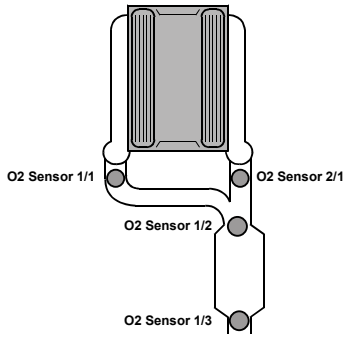
For V-configuration engines with dual exhaust systems, there may be a separate upstream and downstream O2S for each bank. This will result in the following naming convention:

O2S B1 S1 = bank 1, upstream
O2S B1 S2 = bank 1, downstream
O2S B2 S1 = bank 2, upstream
O2S B2 S2 = bank 2, downstream



On some V-configuration engines with 2 upstream O2S, there may be an O2S 3. O2S 3 is the downstream O2S after the catalytic converter. This configuration may have a third O2S ahead of the catalytic converter and results in the following naming convention:

O2S B1 S1 = bank 1, upstream
O2S B1 S2 = bank 1, upstream
O2S B2 S1 = bank 2, upstream
O2S B1 S3 = bank 1, downstream



Together, these conventions are all used to identify the O2S that may be causing a DTC or producing a faulty signal. The O2S naming conventions shown here are consistent with J1979. Please consult the appropriate service manual for more information on the vehicle that you are working on.

C. DEFINITION OF CODE TYPE

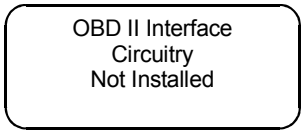
The Asian Imports application cartridge uses five description for code types, which are Auto, Manual, ECU LED, Malfunction Indicator Lamp (MIL) codes, or OBDII DTCs.

Autocodes	Term used when tester can read codes from the vehicle ECU automatically, via the data link connector. Used when vehicle is supported with F2: DTC.
Mancodes	Term used when tester provides information on the tester display about how to read codes from vehicle ECU, and there is no connection to the vehicle via a diagnostic connector. Equipment used to manually read DTCs includes single wire jumper, analog voltmeter, ECU LED, or Mastertech oscilloscope function. Used when vehicle is supported with F1: DTC ENTRY.
ECU LED	Term used when tester provides information the on tester display about how to read ECU codes from vehicle ECU LED, and there is no connection to the vehicle via a diagnostic connector. Equipment used to manually read DTCs includes single wire jumper. Used when vehicle is supported with F1: DTC ENTRY.
MILcodes	Term used when tester provides information the on tester display about how to read ECU codes from vehicle MIL, and there is no connection to the vehicle via a diagnostic connector. Equipment used to manually read DTCs includes single wire jumper. Used when vehicle is supported with F1: DTC ENTRY.
OBD II DTC	Term used to describe a powertrain code that can be read from a vehicle ECU automatically, via the data link connector. The Society of Automotive Engineers (SAE) has defined a standardized set of five-character, alpha-numeric DTCs which can be read from an ECU by scan tool. These DTCs are only available on OBD II compliant vehicles.

D. IF YOU'RE HAVING A PROBLEM

This appendix describes some of the possible problems which you might run into when you try to use the Asian Imports Software on an OBD II compliant vehicle.

OBD II INTERFACE CIRCUITRY NOT INSTALLED



Possible Cause:

- OBD II Interface Circuitry is not installed in the Tester.

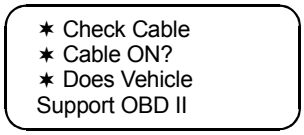
Recommendations:

- Verify that the vehicle's ignition is on.
- Remove power from the tester by unplugging the DLC cable and reconnecting the cable.
- Verify that the OBD II Interface Circuitry is installed in your tester in one of the following configurations:
- An OBD II Interface Cartridge is installed in the top slot of the Tech 1A.
- A Vehicle Interface Module (VIM) is connected “in-line” with the serial data cable for either the TECH 1 or TECH 1A.
- An OBD II compliant daughter board inside the Mastertech.

NOTE

The OBD II Interface Cartridge will not work with a TECH 1. An error message, OBD II Interface Circuitry Not Installed, will be displayed if you attempt to use the OBD II Interface Cartridge with a TECH 1.

TESTER IS UNABLE TO COMMUNICATE WITH THE VEHICLE



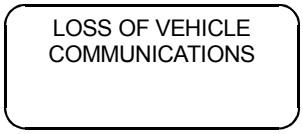
Possible Causes:

- Vehicle's ignition is off.
- Diagnostic cable is not plugged into vehicle's diagnostic connector.
- Vehicle is not OBD II-compatible.

Recommendations:

- Verify that the vehicle's ignition is on.
- Verify that cable is plugged into vehicle's diagnostic connector.
- Check underhood decal for OBD II certification.

TESTER LOSES COMMUNICATION WITH THE VEHICLE



Possible Causes:

- Vehicle's ignition was turned off.
- Diagnostic cable came loose from vehicle's diagnostic connector.
- Vehicle failed to respond to query from tester.

Recommendations:

- Verify that the vehicle's ignition is on.
- Verify that cable is plugged into vehicle's diagnostic connector.
- Turn tester and vehicle's ignition off. Then turn ignition to on, followed by turning on the tester and attempting to reestablish communication.
- Some vehicles fail to respond properly to tester queries for certain tests. This is particularly true with oxygen sensor tests if all readiness tests have not been completed. If possible, drive the vehicle to complete the readiness tests and then rerun the tests.

PARAMETER UPDATE RATE IS SLOW

Possible Cause:

- A slow update rate is characteristic of OBD II communications. A typical update rate is approximately 125 to 150 ms per parameter (7 or 8 updates per second for a single parameter). Therefore, a typical list of 20 parameters will only be updated approximately every 3 seconds.

Recommendation:

- If a faster update rate is needed, select fewer parameters using the CUSTOM LIST function. Select only the parameters needed for a test. For example, you can look at just an oxygen sensor signal and get an update of 7 or 8 times a second.

NOT ALL PARAMETERS DISPLAYED

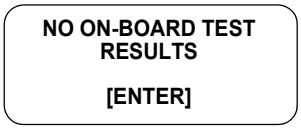
Possible Cause:

- The vehicle is not reporting all of the parameters. The Asian Imports software queries the vehicle's ECU to determine what parameters are supported by the ECU on OBD II compliant vehicles. The tester then creates a data list based on these parameters. If the vehicle contains a particular sensor, but does not tell the TESTER that it supports that parameter (e.g. a downstream oxygen sensor) the software will not display that parameter.

Recommendation:

- Diagnosis must be performed based on other diagnostic data or procedures.

TESTER DISPLAYS “TEST RESULTS” MESSAGE



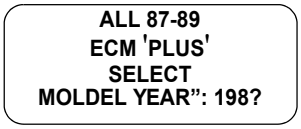
Possible Cause:

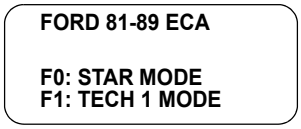
- This mode is not supported by this vehicle.

Recommendation:

- Try a different test mode. This display can occur in the O2S Results mode if the vehicle manufacturer supports O2S testing via a different mode. Some manufacturers use the non-continuous version of the On-Board Tests mode to report the results of oxygen sensor testing.

WRONG DISPLAY AFTER POWER IS APPLIED





Possible Causes:

- Wrong master cartridge is installed.
- Master cartridge is malfunctioning.
- Tester is malfunctioning.

Recommendations:

- Verify that the cartridge is installed in the bottom slot of the tester and that there isn't a master cartridge (e.g. “E/K 86-87 SYSTEM”) in the top slot.
- Try another cartridge.
- Perform the Self-test as described in the Operator's Manual.

E. IF YOU ARE USING A TECH 1 TESTER

Using the Asian Imports application cartridge with a TECH 1 Tester

When using a TECH 1 tester on Toyota or Lexus vehicles, the number of OBD systems that the tester can communicate with will be limited to Engine Data, Engine DTCs, and Transmission DTCs. OBD Systems available will depend on the vehicle (example: most Toyota and Lexus vehicles have engine diagnostics, but may or may not have transmission diagnostics).

F. GLOSSARY OF TERMS, ACRONYMS, AND ABBREVIATIONS

The following is a list of terms, acronyms, and abbreviations which are applicable to, OBD, OBD I, and OBD II diagnosis and/or the operation of this software.

49ST	49 States
A/C	Air Conditioning
A/S	AIR Solenoid
A/T	Automatic Transmission
A.A.C.	Auxiliary Air Control
ABS	Absolute
ACCEL	Accelerated, or Accelerator
ACV	Air Control Valve
ADJ	Adjustment
AFM	Air Flow Meter
AIR	Secondary Air Injection
ALDL	Assembly Line Communication Link
ANG	Angle
AP	Atmospheric Pressure
ASP	Aspirated
ASV	Air Supply Valve
AT	Automatic Transmission
ATF	Automatic Transmission Fluid
ATM	Atmospheric Pressure
AUX	Auxiliary
B+	Battery Plus Voltage
BAC	Bypass Air Control
BARO	Barometric Pressure/ Atmospheric Pressure
BLK	Block, or Black
BLM	Block Learn
BTDC	Before Top Dead Center
CA	California
CAL	Calibration
CAN	Canada
CARB	Carburetor
CARB	The California Air Resource Board. CARB is the regulatory agency which specifies vehicle emissions standards and testing programs. OBD II is CARB's latest program for on-board and off-board test requirements for new vehicles.
CC	Carter Carburetor
CC	Cruise Control
CCP	Charcoal Canister Purge
C.E.	Check Engine
CEL	Check Engine Lamp
CH	Chamber
CID	Component Identifier. Used in the Non-Continuous Test Results mode of the On-Board Tests function to specify the component for which the test results are being reported. Refer to the service manual for the vehicle under test for a definition of the CIDs.
CK	Crankshaft
CKP	Crankshaft Position

CKT	Circuit
CL	Clearance Light
CLCC	Closed Loop Carburetor Control
CL-Fault	Closed Loop with fault for FUEL STATUS parameter. Used to indicate that the fuel system is operating closed loop even though a fault with at least one oxygen sensor has been detected. The ECU may be using a single oxygen sensor for fuel control.
CMP	Camshaft Position
CNTRL	Control
COM	Communication
COMM	Communication
CONT	Control
CONTR	Control
CONV	Converter
CTL	Control
CYL	Cylinder
Data List	The Data List mode is used to examine the state of the current diagnostic data parameters (SAE J1979 mode 1).
DECEL	Deceleration
DEF	Defroster
DEG	Degree
DI	Distributor Ignition (ignition systems with a distributor)
DIFF	Differential
DJC	Diagnostic Jumper Connector
DLC	The Data Link Connector provides the link between the tester and the vehicle.
DLC	Diagnostic Link Connector
DOHC	Double Overhead Cam
Drive Cycle	A single key-on to key-off cycle where the engine has been started then shut down.
DTC	Diagnostic Trouble Codes (DTCs) indicate fault conditions found by the vehicle's on-board controller while it is monitoring the vehicle's operation. Refer to discussion of “Pxxxx.”
DUR	Duration
ECM	Engine Control Module
ECT	Engine Coolant Temperature
ECT (°)	Engine Coolant Temperature in degrees. The Unit Conversion function can be used to switch between °F and °C.
ECU	Electronic Control Unit. The module which performs the OBD II testing and communicates with the OBD II Scan Tool.
ECU	Engine, or Electronic Control Unit
EFE	Early Fuel Evaporation
EFFI	Efficiency
EFI	Electronic Fuel Injection
EGR	Exhaust Gas Recirculation
EGRT	Exhaust Gas Recirculation Temperature
EL	Electronic Ignition (ignition systems without a distributor or distributorless)
ENG	Engine
ESC	Electronic Spark Control
EVAP	Evaporative Emission
EVRV	Electronic Vacuum Regulator Valve
F/T	Full Time
FAIL	Failure
FB	Feed Back

FCC	Federal Communications Commission
FDBK	Feedback
FI	Fuel Injection
F.I.C.D	Fast Idle Control Device
FLD	Field
FNT	Front
FP	Fuel Pump
FPRC	Fuel Pressure Regulator Control
Freeze Frame	An OBD II test mode where the tester displays diagnostic data parameters which were saved by the vehicle at the time a Diagnostic Trouble Code occurred.
FREQ	Frequency
FRNT	Front
FRT	Front
FT	Fuel Trim
FT-O2S B1 S1	Short-Term Fuel Trim for oxygen sensor 1 on Bank 1. This parameter indicates the amount of adjustment of the fuel injected into the engine based on feedback from this oxygen sensor.
FTP	Federal Test Procedure. A test procedure used to determine compliance of light-duty motor vehicles with federal emissions standards. The FTP simulates on-road operation and includes cold start-up, idle operation, acceleration, deceleration, a variety of part throttle speed/load conditions, and hot start-up.
FTR	Fuel Trim
FUEL STATUS 1	Fuel System Status for Bank 1. This parameter indicates whether the fuel control system for Bank 1 is operating Open Loop or Closed Loop (using feedback from one or more oxygen sensors).
FUNC	Function
FXS	Fixed Spark Mode
GMP4	Microcomputer type used in High Speed ECMs
GND	Ground
HA	High Altitude
HAC	High Altitude Control
HC	Hitachi Carburetor
Hexadecimal ($)	A number system used by computers consisting of 16 digits. Hexadecimal numbers are represented by the digits 0 through 9 plus “A” through “F” (representing values of 10 through 15). On the tester and in this manual, hexadecimal numbers are preceded with a “$” (e.g. $C4, $7F or $41).
HF	High Fuel
HO2S	Heated Oxygen Sensor
HTD	Heated
HTR	Heater
HVAC	Heating, Ventilation, and Air Conditioning
IAC	Idle Air Control
IAT	Intake Air Temperature, or Intake Air Thermosensor
IAT (°)	Intake Air Temperature in degrees. The Unit Conversion function can be used to switch between °F and °C.
ID	Identification
IDL	Idle
IG	Ignition
IGN	Ignition
IM240	IM240 is an enhanced inspection and maintenance test program legislated by the U.S. Environmental Protection Agency (EPA) to meet federal clean-air standards.

INJ	Injector
INT	Intake
ISC	Idle Speed Control
ISO	International Organization for Standardization. The European organization which controls the ISO 9141 documents applicable to OBD II.
ISO 9141	A European document defining a class of communications between vehicle ECUs and off-board test equipment. ISO 9141 provides the basis for a large number of different communications protocols. Most of these protocols are specific to various equipment or vehicle manufacturers. The title of this document is “Road Vehicles-Diagnostic Systems; Requirements for Interchange of Digital Information.”
ISO 9141-2	A European document defining an ISO 9141 protocol to be used for support of CARB OBD II diagnostics. The title of this document is “Road Vehicles-Diagnostic Systems; Part 2: CARB Requirements for Interchange of Digital Information.”
J1850	SAE Standard defining protocols which are used for OBD II communications. Two versions of this protocol are used for OBD II: the 10.4 Kbits/sec VPW protocol and the 41.6 Kbits/sec PWM protocol. The title of this document is “Class B Data Communication Network Interface.”
J1930	SAE Recommended Practice defining standard terminology to be used for support of OBD II testing. The title of this document is “Electrical/ Electronic Systems Diagnostic Terms, Definitions, Abbreviations and Acronyms.”
J1962	SAE Recommended Practice defining the industry standard connector used for OBD II. This connector contains 16 pins, 7 which are defined by the SAE and 9 which are available for manufacturer-specific uses. The title of this document is “Diagnostic Connector.”
J1978	SAE Recommended Practice defining the requirements for a standard tester to be used for performing OBD II testing. The title of this document is “OBD II Scan Tool.”
J1979	SAE Recommended Practice defining the operating modes to be used by an OBD II Scan Tool for accessing diagnostic data from an OBD II-compliant vehicle. The title of this document is “E/E Diagnostic Test Modes.”
J2012	SAE Recommended Practice defining the diagnostic trouble codes (DTCs) to be used by the vehicle's ECU for reporting the status of the on-board diagnostic tests. The title of this document is “Recommended Practice for Diagnostic Trouble Code Definitions.”
J2190	SAE Recommended Practice defining possible methods for vehicle manufacturers to implement enhancements to OBD II. J2190 implementations are specific to the various manufacturers and are often referred to as “Enhanced OBD II.” The title of this document is “Enhanced E/E Diagnostic Test Modes.”
J2205	SAE Recommended Practice defining a method of expanding an OBD II Scan Tool to support manufacturer-specific test modes. The title of this document is “Expanded Diagnostic Protocol for OBD II Scan Tools.”

KPa	Kilo-pascals
KPH	Kilometers per Hour
KS	Knock Sensor
LAF	Linear Air Fuel Ratio
LED	Light Emitting Diode
LF	Left Front
LR	Left Rear
LT	Light
LT	Long-Term
LT FT 1	Long-Term Fuel Trim for Bank 1
M/T	Manual Transmission
MAF	Mass Air Flow
MAF (R)	Air Flow Rate from Mass Air Flow (MAF) Sensor. The Unit Conversion function can be used to switch between gm/sec and lb/min.
MAG	Magnet
MALF	Malfunction
MAN(I)	Manifold
MAP	Manifold Absolute Pressure
MAP (P)	Intake Manifold Absolute Pressure in units of pressure. The Unit Conversion function can be used to switch between kPa, inHg and mmHg.
MAT	Manifold Air Temperature
MFI	Multiport Fuel Injection
MIL	Malfunction Indicator Lamp. Used to indicate that an emissions-related fault has been detected by the ECU and a DTC has been set. Typically, the MIL stays illuminated while the fault is present and for 3 ignition cycles after the fault has gone away. Generally, if the vehicle's on-board diagnosis has detected that the fault is not present for 3 consecutive ignition cycles, the MIL will be turned off. Even though the MIL is off, the DTC will still be present in the ECU's memory and can be read using the tester's DTCs function.
MIN	Minimum
mmHg	Millimeters of Mercury
MON	Monitor
MONIT	Monitor
MOP	Metering Oil Pump
MPFI	Multi Port Fuel Injection
MPH	Miles Per Hour
MPI	Multi Port Fuel Injection
MPS	Motor Position Sensor
MPU	Micro Processing Unit
ms	An abbreviation for milliseconds. A millisecond is 1/1000th of a second.
MSC	Mass Storage Cartridge
MT	Manual Transmission
MTR	Motor
mV	Millivolts
N/A	Not Available.
NEUT	Neutral
O2	Oxygen
O2S	Oxygen Sensor
O2S B1 S1	Oxygen Sensor 1 for Bank 1

OBD On-Board Diagnostics. OBD is a general term used to refer to any self-diagnosis performed by the vehicle's ECUs. OBD is also used to refer to the EPA's federal OBD program.

OBD I OBD I refers to California's first phase of on-board diagnostics. OBD I requires that the ECU diagnose some of the emissions-related components and that the DTCs resulting from that diagnosis be made available to the service technician. In many cases, OBD I codes are displayed via a flashing MIL light.

OBD II The California Air Resource Board (CARB) requires that, by 1996, all vehicles sold in California contain a certain minimum “on-board diagnostic” capability to diagnose emissions-related failures of the engine control system. These diagnostic requirements have been designated as OBD II (On-Board Diagnostics, Phase II) with a goal of monitoring “all of the emissions-related components on-board the vehicle for proper operation.” CARB's intent with the OBD II program is to “permit the State's Inspection and Maintenance Program to evolve into a check of the on-board computer for the presence of diagnostic trouble codes; underhood and tailpipe inspections would no longer be required.”

OD Over Drive

OHC Overhead Cam

OL-Drive Open Loop due to driving conditions for FUEL STATUS parameter. Used to indicate that the fuel system is operating open loop due to such driving conditions as power enrichment or deceleration reduction.

OL-Fault Open Loop due to fault condition for FUEL STATUS parameter. Used to indicate that the fuel system is operating open loop due to a detected system fault.

Other Test Results A test mode where the results of the on-board tests are reported for tests which are run on non-continuously monitored systems. These tests are manufacturer-specific and are reported for manufacturer-assigned test IDs (TIDs) and component IDs (CIDs). Test values are reported by the ECU along with minimum and/or maximum acceptable limits for the test. The tester displays the PASS/FAIL status for each TID/CID combination. This test mode is not supported by all vehicles.

P/B Passive Belt

P/N Park or Neutral

PCM Power Control Module

PCM Powertrain Control Module. The module which controls vehicle engine and transmission operation and communicates diagnostic data information to the technician.

PCS Pressure Control Solenoid

Pending DTCs A test mode where the results are reported for tests which are run on continuously monitored systems. These test results are reported the same way DTCs are reported using code designations of the form "Pxxxx." These test results can indicate a condition which could cause a DTC to be set if the condition persists. This test mode is not supported by all vehicles.

PFI Port Fuel Injection

PID Parameter Identifier. PIDs are hexadecimal numbers used to identify parameters used by the Data List, SNAPSHOT, and Freeze Frame modes.

PMP Pump

POS Position

POTEN Potentiometer

PRC Pressure Regulator Control

PREP Prepare

PRESS Pressure

PRNDL Park-Reverse-Neutral-Drive-Low

PROM Programmable Read Only Memory

PS SV Power Steering Solenoid Vacuum Valve

PSM Pressure Switch Module

PSP Power Steering Pressure

PWM Pulse Width Module

PWM Pulse Width Modulation. The method used to encode the data in the 41.6 Kbit/sec version of the J1850 protocol.

Pxxxx Powertrain Diagnostic Trouble Code (DTC) xxxx. The SAE has defined a standardized set of five-character, alpha-numeric DTCs. At this time, only Powertrain (P) codes have been defined. In the future, DTCs will be defined for chassis faults (C codes), body faults (B codes), and vehicle network faults (U codes). The SAE-defined Powertrain DTCs are in the range P0100 to P0999. DTCs with designations of P1000 or greater are unique to the individual manufacturers.

R Rear

RAD Radiator

Readiness Tests The Readiness Tests mode allows you to display the status of the vehicle's on-board monitors which monitor the operation of the emissions-related components. These monitors must be run in order for the DTC and Test Result displays to accurately reflect the condition of the vehicle's emissions-related components.

RECIRC Recirculation

REF Reference

REG Regulator

RF Right Front

R&R Remove and Replace

RR Right Rear

RS232 Standard Serial Communications interface

RST Reset

RT Right

S/R Single Range

SAE	Society of Automotive Engineers. The organization which controls most of the documents defining the interface between the vehicle's OBD II controllers and off-board test equipment.
SCNDRY	Secondary
SDL	Serial Data Link
SEC	Secondary
SENS	Sensor
SEQ	Sequential
SFI	Sequential Fuel Injection
SHFT	Shift
SHT	Short
SIG	Signal
SIR	Supplemental Inflatable Restraint
SMPFI	Sequential Multi-Port Fuel Injection
Snapshot	The snapshot mode is used to capture data over a period of time. It can be used to support road testing as well as testing in the service bay.
SNSR	Sensor
SOHC	Single Overhead Cam
SOL	Solenoid
SPD	Speed
SPEC	Specification
SPI	Single Port Fuel Injection
SPV	Solenoid Purge Valve
SRV	Service
S.T.	Short Term
STEP	Stepper
ST FT 1	Short-Term Fuel Trim for Bank 1
SW	Switch
SYS	System
TAMAX	Throttle Angle Maximum
TBI	Throttle Body Fuel Injection
TC	Traction Control
TCC	Torque Converter Clutch
TCM	Transmission Control Module
TCS	Traction Control System
TDC	Top Dead Center
TDCL	Toyota Diagnostic Communication Link
TEMP	Temperature
THROT	Throttle
TICS	Triple Induction Control System
TID	Test Identifier. The TID is used by the O2S Test Results mode and by the Non-Continuous On-Board Test Results mode to identify manufacturer-specific tests. The service manual for the vehicle under test should be used to interpret the TID.
TMP	Temperature
TP	Throttle Position
TPI	Tuned Port Injection
TPS	Throttle Position Sensor
TPS (%)	Absolute Throttle Position Sensor in percent.
TRAC	Traction
TRANS	Transmission
Trip	Vehicle operation following a key-off period which has at least one warm-up cycle and one drive cycle.
UART	Universal Asynchronous Receiver/ Transmitter. A standard data-encoding technique used extensively for serial communication.
VAC	Vacuum
VAF	Volume Air Flow

VDEIC	Variable Dynamic Effect Intake Control
VEH	Vehicle
VICS	Variable Inertia Charging System
VIN	Vehicle Identification Number
VLV	Valve
VOLT	Voltage
VPW	Variable Pulse Width Modulation. The method used to encode the data in the 10.4 Kbit/sec version of the J1850 protocol.
VRIS	Variable Resonance Induction System
VSS	Vehicle Speed Sensor
VSV	Vacuum Switching Valve
VTEC	Variable Timing Electronic Camshaft
Warm-up Cycle	Engine coolant temperature increase by at least 40°F since start-up that reaches a temperature of 160°F.
WOT	Wide Open Throttle
WST	Wastegate